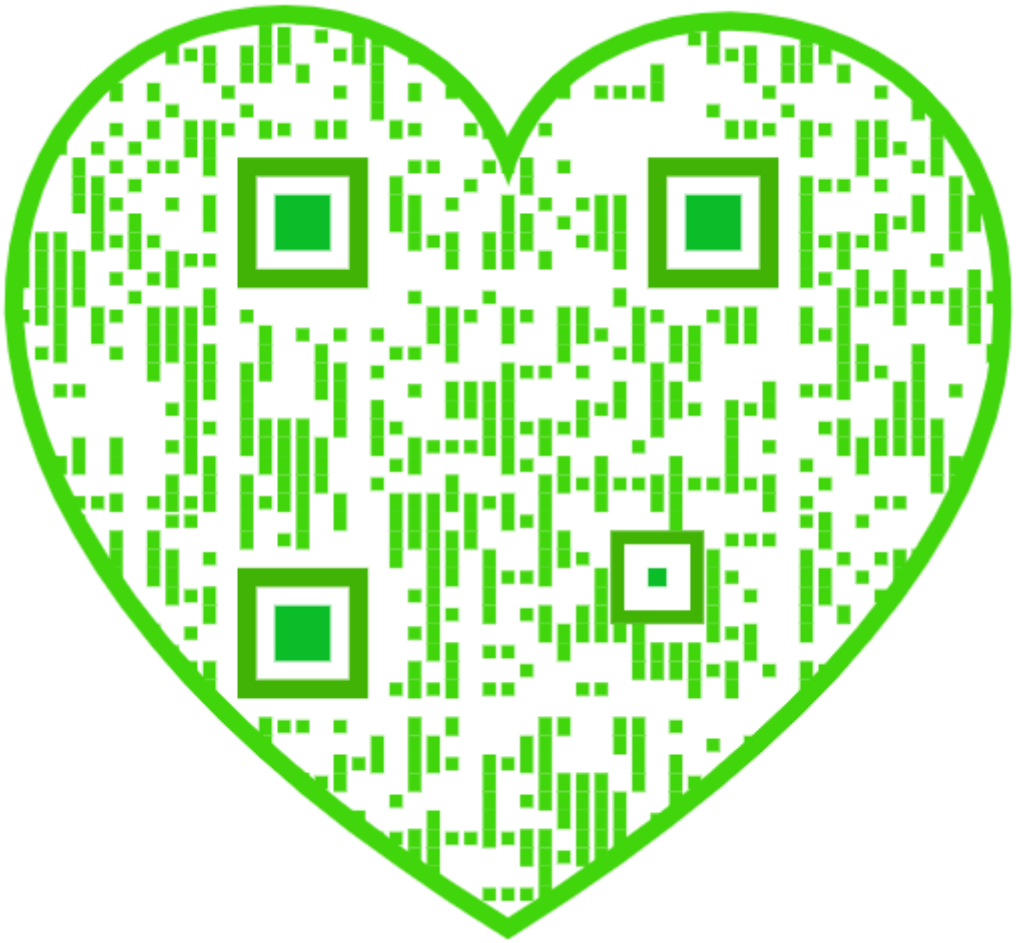
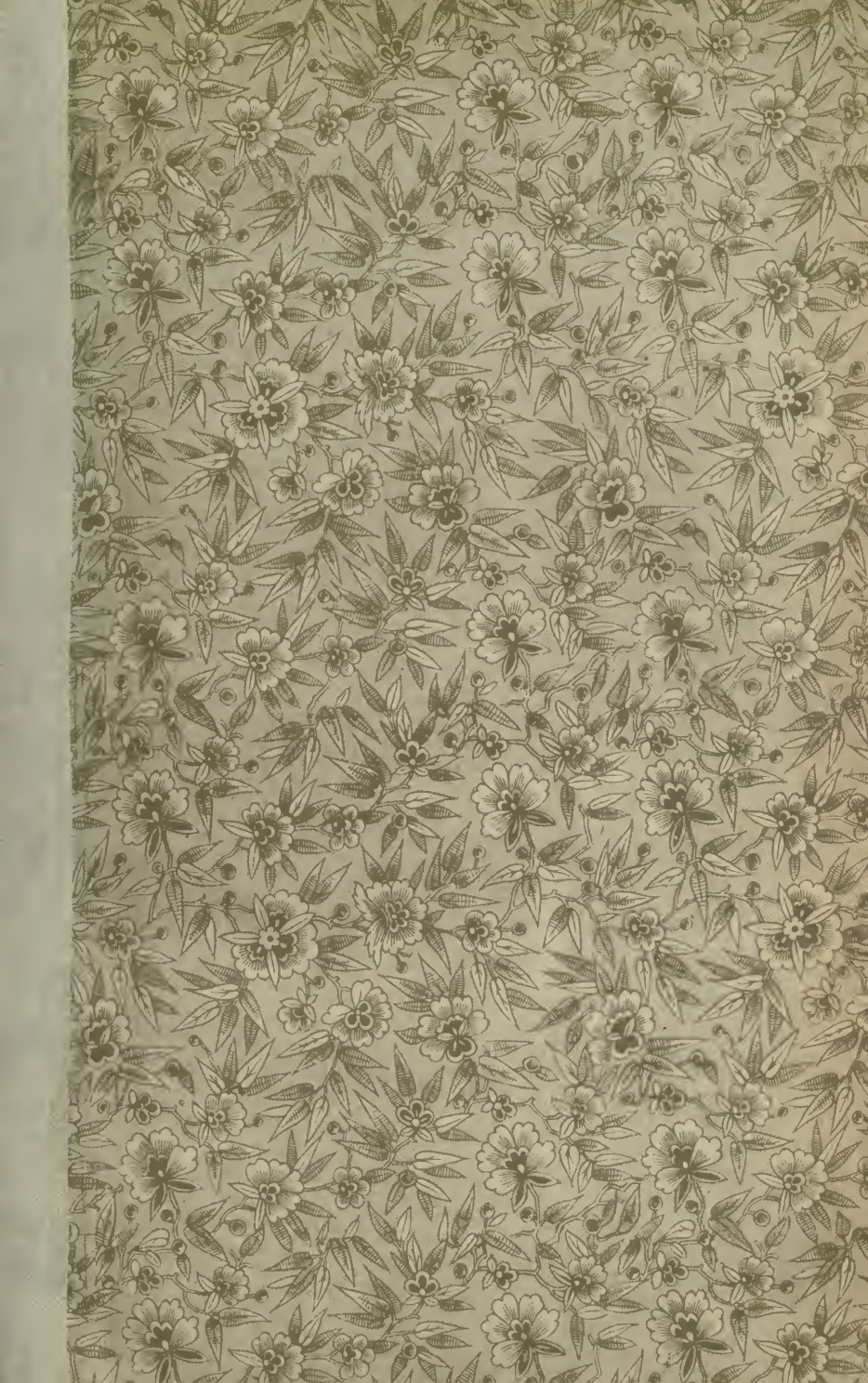
PRACTICAL

GAME PRESERVING





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PRACTICAL GAME PRESERVING:

CONTAINING THE FULLEST DIRECTIONS FOR

REARING AND PRESERVING BOTH WINGED AND GROUND GAME,

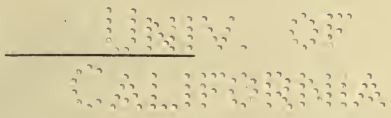
AND DESTROYING VERMIN;

WITH OTHER INFORMATION OF VALUE TO THE GAME PRESERVER.

ILLUSTRATED.

BY WILLIAM CARNEGIE ("MOORMAN"),

AUTHOR OF "PRACTICAL TRAPPING," ETC.



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PREFACE.

IN the following pages I have endeavoured to supply a want which became apparent to me when first I tried my hand at game preserving, and I trust that this volume, though obviously incomplete, will assist others to avoid the many stumbling-blocks incidental to the breeding, rearing, and maintenance of a head of game.

My self-imposed task of providing a manual for the tyro has been a pleasant one, and I hope that the book, besides assisting, and perhaps guiding, those engaged in the preservation of game, will furnish inducements to its readers to become amateur gamekeepers.

WILLIAM CARNEGIE.

January, 1884.

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PART I.

WINGED GAME.

PRACTICAL
GAME PRESERVING.

CHAPTER I.—PHEASANTS.

Natural History.

BEFORE undertaking the introduction of a head of game on an estate, the preserver should acquire an intimate knowledge of the natural habits of the bird or animal which it may be desired to maintain in large numbers, and in order to obtain such insight into its habits and favourite haunts, nothing less than actual observation of the life it leads in a natural state will suffice. One can certainly acquire from books written by practical hands a large amount of the information necessary, but there are many peculiarities of the pheasant, and, indeed, of all our game-birds, that will only become apparent to the close observer of nature. Although the particular kind of pheasant which

inhabits the preserves of the British Isles is unmistakeably a denizen of the woods, it is not by any means notable for sharing the characteristics of the winged species, for, in addition to finding the major portion of its food upon the ground, it builds its nest, except under very exceptional circumstances, always on the earth, while it seems to adopt indiscriminately either the boughs of trees or *terra firma* as a roosting place. In its natural state, that is in as far as the pheasant has such in these islands, its haunts are always chosen in or in close proximity to woods or plantations, the most favoured being those where thick undergrowth of small bushes, shrubs, bracken, and bramble abound, as it usually does in the woods and plantations of this country, where the underwood, so celebrated a feature of the landscape, is most conducive to the welfare and contentment of the pheasant.

This game bird is naturally of a retiring disposition, and, during the daytime, remains concealed, as a rule, somewhere amongst the covert it enjoys. Although individual birds are often seen, the number is exceedingly small. The pheasant generally chooses for its feeding times the periods about sunrise and sunset, at which hours the obtaining of food becomes a necessary occupation, while during the remainder of the day it may, like other birds, pick up any morsel of provender which may take its fancy. It has, also, certain defined feeding grounds to which it runs. Sometimes they are near to, occasionally distant from, its haunts; but in any case it adopts a terrestrial, in place of an aerial path, making good use of its legs in preference to flying. In the intervals of feeding the pheasant lies pretty close in the covert or

spinney, and although it may wander about somewhat, its daily existence is invariably within certain bounds, which are only transgressed under exceptional circumstances. At night, the pheasant—except during a certain portion of the year—goes to roost on some neighbouring tree which offers a horizontal branch to perch upon, but its preference for the larch is very marked, and it is noteworthy that pheasants at roost on this kind of tree are the more visible from beneath to any would-be poacher by reason of the scantiness of its foliage. The pheasant's next favourite roosting resort is the spruce tree, and to this belongs every desirable quality for the purpose, and were this sort of fir universally adopted for pheasant preserves, a great blow would be struck at night-poaching. Oak, ash, holly, and other trees which offer the necessary requirements are also freely resorted to. Pheasants do not roost exactly in company, side by side, yet not often widely apart, and where one bird finds a suitable night's quarters, others are not far distant from the spot.

Just before the female bird commences the preliminaries of her peculiar duties, she leaves the boughs at night and finds a roost on the ground, generally ensconcing herself amongst some long grass at the foot of a tree or beneath a shrub. About the same time, or perhaps a little before, the male also adjourns to *terra firma* for his night's lodging, forsaking the trees until he is able to return to them at the end of summer, accompanied by his numerous progeny and mates. The pheasant is, it is almost unnecessary to say, polygamous, each cock bird taking, when in an uninfluenced state, from three to five hens under his care,

but this of course regulates itself a good deal according to the relative numerical superiority of the hens. In the first or second week in March the cock begins his search for mates, heralding the same by a considerable amount of crowing, and showing increased brilliancy of plumage and stateliness of mien, which naturally excites the ire of other would-be cavaliers, the result being a considerable number of battles royal for the possession of the hens. The whole of the pheasant's breeding operations take place on the ground, the nest being a very simple arrangement, consisting of any suitable circular depression, either in the ground proper, beneath a bush, or such similar hindrance to discovery, or it may be in long clover or grass, or in a clump of sedge or other coarse herbage. Unfortunately, pheasants have a too frequent fancy for nesting in long meadow grass or clover; consequently, in these days of mowing machines, the number of nests and broods destroyed is larger far than in the time of the scythe. However, a careful, considerate preserver is aware of this habit, and can take the necessary steps to ensure safety for his nests, guarding them against both the human and mechanical mower.

The nest itself consists of at most but a few leaves or dry wisps of grass, which go to form the only lining upon which the eggs, eight to eighteen, are consecutively deposited. When disturbed, the hen pheasant leaves her nest reluctantly, and is only "pushed up" when concealment or safety is no longer possible; otherwise, when quitting the "nide" or "nid," as the nest is technically termed, she instinctively scratches a covering of leaves or grass over it, and will also

employ various artifices in order to disguise its whereabouts from winged or running vermin, by running some distance to or from it, always approaching or leaving it in a different direction. The hatching season extends from the latter half of May to the middle of July. As soon as the young are from twelve to twenty-four hours out of the shell the hen leads them forth, and the process of rearing—into close consideration of which there is no need to enter—is diligently carried on. If undisturbed, the hen pheasant adopts a particular spot in the neighbourhood of which the young are kept for some time, and as soon as strong enough they are introduced to the mysteries of the hedgerows, and, later on, to the stubbles. Should the brood suffer one or two successive disturbances they are speedily led to the wood or covert, whence they issue only at feeding time. By the middle of September the youngsters are full grown, when, having moulted off their fledgeling garb, they don that of the adult bird, and sally forth rejoicing in their own importance, unconscious of the direful October work in which they are destined to take so prominent and unenviable a part.

The natural food of the pheasant is of great variety, and consists during the first part of the year mainly of plants of a succulent nature, roots of various kinds, and an innumerable quantity of insects of multifarious sorts. During autumn and winter it is, perforce, obliged to vary its diet with beech-mast, hazel nuts, hips and haws, the red fruit of the wild rose, any description of corn obtainable, besides the seeds of a quantity of plants as multifarious as the insects it consumes in summer, spring, and a portion of the autumn.

Any further insight into the natural history of the pheasant is only to be gained by actual observation. The short outline we are able to give of its daily and yearly existence should form a foundation whereon to build up a thorough knowledge of its habits.

CHAPTER II.—PHEASANTS.

Introduction—Breeding and Rearing

THOSE who are about to introduce or commence preserving pheasants on an estate where hitherto there have been no birds, or at least extremely few, rarely decide upon so doing without having beforehand a suitable locality. In truth it is the apparent suitability of the estate that usually gives rise to the desire to raise a stock of pheasants on it. Hence there is little need of a lengthy description of the qualities proper to a pheasant preserve.

The progress of agriculture of late years has tended steadily to lessen the area of covert everywhere, and those, therefore, who do not desire the total elimination of woods and coppices have sought to counteract the effect of the land hunger of agriculturists by planting various tracts. There are very few districts throughout the country unmarked by suitable sites for pheasant preserves, the only requisites being an equal amount, if not a preponderance of woodland coppice and other coverts over arable and grassland.

The best coverts are those of young trees, where spruce, larch, fir, oak, and ash are well commingled, the spruce having the advantage if possible in point of numbers; and beneath these a fairly abundant undergrowth of hazel, holly and other evergreen shrubs such as laurel. Together with the ubiquitous bramble and bracken, these trees would present a shelter alluring to and liked by the birds. We purpose later on, however, to devote a chapter to the improvement and general management of pheasant coverts, and therefore must leave this part of the matter for the present. The introduction of pheasants upon land hitherto destitute alike either of game birds or of any form of preserving is a task which is generally difficult and nearly always expensive. There is no getting away from the fact that a stock of pheasants means laying out money, all the much vaunted statements of some theoretical preservers to the contrary. The only matter worthy of attention in this respect is the limiting of the expense, which by careful and considerate action may be brought well below the extravagant and unnecessary cost of half a guinea per pheasant shot which some preservers with large pockets and larger imaginations claim to expend.

The chief difficulties which will present themselves on the first attempt to raise a stock of pheasants are such as may be expected under the circumstances. In the first place, we have coverts into which we turn a number of birds; they find none of their kind already established there, and naturally seek to find other habitats more suited to their natural likings. Then, being strange to the place, they are more liable to be poached off very quickly, unless strict vigilance

be kept, while vermin of all sorts will have previously had their own free will to multiply to an unlimited extent, and will make their presence felt by wholesale plunder. Consequently, the first steps taken must be to clear off, or at least decimate the vermin, at the same time using every endeavour to prevent the birds from straying off, and the most effective and practical manner of gaining this end is to rear the nucleus of one's stock in a semi-wild state, so that the young birds, never knowing otherwise, adapt themselves immediately to the place and attract others and old birds by their company. The vermin is best and most easily cleared out to a large extent before any birds are turned down or reared, and, this matter once satisfactorily disposed of, a determination can be arrived at as to the plan for raising the prospective head of birds.

The purchase of pheasants "to turn down" is invariably a very unsatisfactory mode of commencing operations. Sometimes the birds when turned away, if carefully watched and considerately tended with sufficient allurement in the shape of daily supplies of tasty food, may be induced to regulate themselves to their new domicile; but we have ofttimes found it to be the case that they never settled down, nor took to the place, but had invariably decreased to about five-sixths their original number after one winter. We shall therefore take two instances; in one where actually there are no pheasants at all; in the second where there is a small sprinkling already established, and describe a thorough and practical course of procedure in each, which will ultimately result in a sufficiency of birds to ensure at least a month's good rough pheasant shooting,

and reserve the consideration of wholesale preserving for the purposes of the battue for another time.

It must be admitted that there is more than one way of going to work; indeed, most successful preservers have their own or their keeper's own particular system. It would, however, be useless and unprofitable to consider half-a-dozen different ways; one good practical one is sufficient, and if it requires moderating or extending to suit individual occasions, that must be left to the intelligence of the preserver. Too much dissertation and too many capital plans often end in nothing or next to nothing. Given, then, our coverts and woods, all quite destitute of any pheasants whatever, the plan generally recommended would be to breed and hand-rear some birds, and, even then, repeating the process annually until a head of game were established. Under the circumstances, this is an impolitic mode of going to work, and the more practical and quickly successful way is to form a large rough pen for the rearing of some birds, in the particular covert most suited.

The site selected must be where there is an abundance of low covert, such as small fir-saplings, brambles, holly and laurel bushes, while the larger trees must consist of spruce and larch. Let the site be well in the centre of the covert, and quite secure from disturbance. The space enclosed should be for, say, one dozen hens at most, thirty yards long by fifteen wide. The best way of enclosing it is to use wire netting attached to posts or the stems of the trees, of the height of about eight feet, and pegged down to the ground. At one end or side a gateway must be made. The soil within the pen must be dry, and produce

a good healthy growth of verdure, while if it be possible to send a small ditch of running water through the enclosure so much the better, both for the birds and their keeper. The birds, in the proportion of one cock to six hens, must be turned down in the pen about the end of February (there is no gain in confining them earlier), having been first either pinioned or had their wings cut. For our part, we should prefer the cutting, although it entails an almost fortnightly clipping, but the advantage is gained that you can eventually turn your birds away later in the season. Those who prefer to cover over the pen with rabbit or hare netting can, of course, do so, and the plan is unmistakably to be recommended in spite of the fact that the birds in their perverse desire to fly upward occasionally become entangled in the meshes and injured, if not killed. Taking all the circumstances into consideration, we incline towards the adoption of a covering of netting.

Pinioning pheasants is oftimes made an unnecessarily cruel operation by some who assert that it is indispensable that the wing should be taken off up to the second joint. This is a mistaken notion, for, provided the wire fencing of the pen is six feet or over, the only pinioning necessary is to remove the point of the wing. To effect this the wing must be held extended by one person, while another, with a very sharp knife, severs the first joint, and then by a sharp twist it is wrenched off. The operation seems to cause the bird but little pain, and the use of some cold salt and water will prove a sufficiently healing application. Birds pinioned thus are rarely able to get over an 8ft. fence, but if it really be found necessary, the second joint of the wing is the one at

which to pinion. It must first be carefully cut all round and then wrenched off; salt and water being applied afterwards.

Cutting the wings of pheasants is a less hurtful operation, but entails more trouble, as it requires repeating every three weeks, but this is not a very terrible matter, and if the catching of the birds be carefully performed, causing them either little fear or disturbance, the objections to it are slight, while it has the advantage already named. In the case of small enclosures, such as we now have under consideration, the birds are best and most easily caught at dusk or dark, and a couple of persons with a lantern can soon catch and cut the wings of the pheasants, without causing them much anxiety of mind or body. Of course, later on, when some of the birds are sitting, there is no advantage gained by disturbing them. The hens placed in this enclosure must be fed regularly and carefully, and it is important that a proper system of feeding be decided on and carried out. The birds naturally find a certain amount of food in an enclosure of the kind advocated, but still their semi-domesticated state will require a large amount of attention to be bestowed on them. We consider that feeding time should be but twice a day—first thing in the morning, and about two or three hours before sunset. One great fact about pheasant feeding seems often to be overlooked, that is, that because they are wild birds brought into a half domesticated and restrained state, an artificial one, so to speak, it is necessary not only to change the character of the bird's existence, but its food as well. This is erroneous and unpractical, and we feel convinced that if more desire were manifested to imitate

the pheasants' natural food, we should have a smaller percentage of losses and a healthier class of pen birds.

The food of pheasants in captivity should consist primarily of certain dry foods and green foods. Of the former, the most valuable are maize, barley, wheat, dari and beans, while oats, buckwheat, malt, peas and rice may be regarded as of but secondary worth. Maize is certainly the most largely used, and the best, and barley and beans next in point of value. Out of the list given individual preservers can select such as may be most easily commanded, and determine upon a certain defined course of food for their birds. We are no advocates of a general mixture of dry foods, and although attesting the desirability of regular changes, consider that one or two of the above given for, say, a week or fornight at a time, are most desirable. While mentioning dry foods we must not overlook the merits of those many prepared and patented by well-known firms, and the "Game Meal" and "Crissel" of Spratts Patent stand in the foremost rank for their respective qualifications; the former as a staple, the other as a substitute for insectile food.

It is in the green and soft vegetable food that preservers mostly err, and that through stint. Even in the pens of the largest size, the green food which grows within their limits becomes objectionable to the pheasants, while in enclosures of small size it is not only unacceptable but deleterious. Consequently the necessity of giving greater attention to this neglected item is very important. Of green foods the most suited are lettuce, cabbage, turnip leaves, and of these there should always be a plentiful supply. Every estate

moreover, offers in its fields, around the hedges and about the lanes, an abundance of green food which may be collected for pheasants penned up, and which they relish. Besides this, boiled potatoes, mangold wurtzel, and even turnip are liked, and often prove singularly acceptable to the birds.

Acorns are often strongly recommended, but these are far from deserving high esteem as an article of food. Occasionally given in very small quantities they are beneficial by way of a tonic. Beech-mast may be given, but not continually or in large quantities. Animal food we strongly object to, and greaves and flesh of any kind are to be avoided. The only thing of the sort worthy of recommendation is occasionally a dead fowl or duck, or the like, buried from six to nine inches deep in the soil of the pen. In the course of time the chrysalides of the maggots will appear on the surface of the ground, and prove a gentle laxative of beneficial character to the pheasants, which eagerly devour them. Some crushed bones or bone meal must occasionally be given as well. Pheasants in pens should always eat all their food, and leave none in the food pans, nor should they be allowed to gorge themselves. At the same time, they should have as much as they want, and no stint made of the food, for which they ought always to be ready. A watchful preserver will soon learn the necessary quantity, and judge the health of his birds by the manner in which they take their daily sustenance. Water must be always obtainable, and, moreover, sweet pure water given in troughs, while, as we said before, if a stream of spring water can be allowed or made even to trickle through the pen, it is a grand gain

towards healthiness of the stock. Lime or broken oyster shells should also be provided at laying time.

When confined in this manner, good healthy first and second-year hens lay from twenty to thirty eggs apiece, and although some of them may drop them anywhere about the pen, the majority will resort daily to some particular spot which will do duty for a nest, consequently they will be easily collected. Owing to the size of the enclosure, most of the hens will commence their laying and nesting operations in the same or similar manner to unrestrained birds, forming their nids, and proceeding in the usual way. The aim of the mode of introducing pheasants here described is that, in addition to the birds hand-reared from eggs laid in the pen, each hen may herself hatch off a nest of youngsters, and rear them, thus producing a small stock of practically wild birds. In a natural state the pheasant rarely lays more than nine eggs, but will occasionally exceed that number. Generally all are hatched out, but the bird is a bad mother, and seems to be more content with five or six chicks reared than the full number. Consequently, if the eggs in each nest in the pen be daily taken until about five-and-twenty or thirty per bird have been obtained, the nests may then be left for the hen to complete her sitting and hatch off. One should, of course, be careful to note that the bird is sitting, otherwise the eggs would be wasted. They must be collected during laying time twice a day—in the morning between ten and eleven, and in the afternoon between four and five. When collecting, put them small end downwards in a box of bran. They should be kept in a tray of this, and be turned every day. One should

then have a number of farmyard hens of the approved type ready to sit, and as sittings of thirteen to fifteen are made up, the hens can be set, and, as soon as the young birds are sufficiently matured to turn down this can be done. They are best placed for a fortnight or so in the inclosure in the covert before having entire range of the place. The several hatchings of the penned hen pheasants are left to the tender mercies of the mother to be reared, and are also given full liberty as soon as their size and strength warrant it. Of course, they will require feeding; but of the nature of this we shall treat later on in the chapter on Hand-rearing Birds.

CHAPTER III.—PHEASANTS.

Maintenance and Increase of Stock.

IN the foregoing chapter we treated solely of the introduction of pheasants upon an estate where previously there were none. In the present we shall consider the means by which a stock of pheasants once obtained is to be kept up, and increased if necessary.

Preserves which contain a fair sprinkling of pheasants, sufficient to give, say, a month of that delightful "rough shooting" over which the enemies of the battue go into raptures, will, unless the ground be extremely unfavourable, generally make up in natural increase any numerical diminution which the gun of the sportsman may cause; consequently the only aids which would be necessary or advisable, were it not desired to raise the head of birds above a certain limit, would take the shape of an introduction of fresh blood, either by birds exchanged from a distance, or by the obtaining of eggs from distantly situated localities, and hatching them out under coops, while in those years when no fresh strain is desirable, one could profit by the fact of pheasants laying many more eggs than they rear young

birds, and obtain from the preserves a necessary complement of such and hand rear from them. It would also be just as satisfactory to raise the necessary fresh stock in a covert pen after the nature of that described in the last chapter. For this we should need to give no further instructions, as any modifications would suggest themselves to the preserver when necessary.

The most practical, and at the same time the most satisfactory, manner of maintaining the same quantity of pheasants annually, is to obtain eggs from the preserves in the spring, hatch them under fowls, hand-rear, and turn them out in the summer. In order to supply a sufficiency of eggs, the preserver must, immediately laying time comes round, carefully search all his coverts for nests, looking thoroughly over them, and noting with exactitude the precise situation of every nid discovered. According to what he learns from such examination as to whether the birds are laying freely or not, so is he able to determine to what extent the nests may be deprived of eggs. If these are being regularly deposited, and things appear to be going on briskly, there can be no harm in taking from each nest day by day up to six or seven eggs. If irregularity in laying be observable, then four or five are sufficient to obtain per nest. In any case, the eggs are collected daily and carefully transported to a place of safety till a large enough number is obtained to set the first batch of hens on. If necessary, a further quantity is procured for other hens which may be available, but we expect the difficulty is more often to obtain a sufficient number of broody hens rather than the eggs. In addition, or sometimes in place of this manner

of obtaining eggs, means can be adopted whereby to secure a number of hen pheasants within an enclosure formed in the preserves, as we have already stated, and as this is a considerable saving of time in collecting eggs, we will give instructions as to the construction of it. Various modes of construction are recommended, but it matters little so long as the site chosen is a good one, and the pen properly made. There is sure to be some suitable spot in the covert where an enclosure about fifteen feet square and eight feet high can be made, with galvanised wire netting, put up on posts or on the trees. The pen must be provided with a door. In the spring of the year, before the birds are mating, catch up not over a dozen tame hens, cut one wing, and turn them down, feeding and watering them regularly, and see that they have good shelter. The wild cocks will soon find them out, and become pretty frequent visitors, and at nesting time the hens will lay anywhere about the pen, up to about three dozen eggs per bird. These are collected daily and set off; when the hens cease laying, turn them loose again, or, if they show signs of nesting, then let them hatch a brood of five or six if so inclined.

Buying eggs annually in place of obtaining home-laid ones is a practice more honoured in the breach than in the observance, except when it is desired to raise the stock at once to so large a number that one's own preserve would not provide the requisite quantity. There are two weighty reasons against buying eggs; the first that from shaking in transit, breakage, &c., so large a percentage are lost or prove unfertile. The second is the very great encouragement the system offers to egg-poaching and stealing.

Unless one orders the necessary supply from some of the well-known sources, as for instance, the Elvedon Game Farm, there is no knowing whence or how the eggs offered are come by. They may often emanate from the nests of one's own pheasants. However, of this further later on. The bought eggs are of course set off under hens, and the chicks hand-reared and turned out as soon as they are matured enough to look after themselves. They will require feeding somewhat carefully at first, but after about a fortnight or three weeks' time the youngsters will learn to know their way about pretty well, and require less assiduous attention.

Buying birds to turn down is only necessary when the present stock of pheasants appears to be deteriorating in quality and healthiness. In such case the mere obtaining of eggs from distant preserves and hatching them out is scarcely a sufficiently speedy process, and it is often a better plan to purchase or exchange a fairly large number of birds with some friendly preserver whose estate is situate in a distant county. Possibly he may also desire a change of blood in his birds, hence the transaction would be mutually desirable. In purchasing fresh birds some discrimination is necessary. Tame or semi-domesticated birds are not worth much as a rule, and there is, to our thinking, nothing like a good healthy lot of carefully caught up wild birds, and, moreover, we would always prefer an equal number of cock and hen pheasants, in place of the usually recommended lot of cock birds only. The best time of year to turn these birds down is at the end of February or beginning of March, six weeks or a month after the season closes. They will then have time to settle down before

mating time comes on. At first they will require feeding a little, but it is best to let them eventually find their way with the rest, and so spread well about.

One of the greatest aids to a natural increase of birds is thorough elimination of all kinds of vermin from the coverts. It has always been a maxim with preservers that "to kill vermin is to breed game;" and unless all furred and feathered varmints are well killed down, there is no chance of maintaining a stock of pheasants, much less increasing it. Poaching, of course, must be kept down, and not only actual night poaching, but the systematic robbery of birds and eggs which will obtain if the preserver does not properly look after his coverts.

A more extended consideration of these several points we must, however, leave for the present, and return to them in the chapter on General Management.

CHAPTER IV.—PHEASANTS.

Rearing by Hand.

THIS mode of obtaining a stock of pheasants has now become almost universal, and the success with which it is carried on is a recommendation which cannot be ignored. The inexperienced preserver, however, who would be initiated into the mysteries of hand-rearing pheasants, otherwise than by observation of the operations of a practised and successful hand, has many difficulties to overcome. Chief of these will probably be the latent and conflicting character of the advice offered from all quarters. It is with considerable diffidence, therefore, that we now approach this important part of our subject, knowing full well how difficult it is to acquire the practical insight into these matters which they demand. We are also fully aware how difficult it is to enunciate a system of operations which may form a basis for any modifications that differences of locality and conditions may necessitate. In putting forward, then, the following instructions, we are cognisant of the fact, that although they may not hold good on every occasion, and in every instance, they are at least practical, and may be varied to a very large

extent according to requirements, into the multifarious nature of which there is no need to enquire.

The sources of the egg supply having been already enlarged upon, the question which next commands attention is the conditions under which they can be hatched off. Pheasants, when confined, show little or no disposition to incubate, and they are to all practical intents and purposes quite useless for this purpose under any but natural conditions, consequently we must have recourse to the common fowl for hatching the eggs. As in most other of the details relating to the hand-rearing of pheasants, opinions differ as to the particular description of fowl best adapted to the requirements. Invariably we find bantams, or any small hens, recommended, but we always consider a medium sized, crossbred fowl, of the usual "henny short-legs," farm-yard description, as quite satisfactory, while, if one must have a particular sort, then the half-bred silkies are the best. It does not, however, matter very much so long as a light but thickly feathered fowl, of quiet unexcitable nature is chosen.

When the time for setting is approaching, steps must be taken beforehand to obtain a good supply of broody hens of the desired type, so that the eggs can be set off fresh and without interruption. It is also always desirable—we might with good cause say necessary—that several hens be put up at the same time, so that the unfertile eggs may be removed and replaced by others in an equally forward state of incubation from one nest devoted to this purpose, while a large number of chicks are hatched out at the same time, and so a saving of trouble be effected. Of the efficacy of

the now well known hydro-incubators as a means for hatching pheasants' eggs, we have no personal experience, but several practical preservers have spoken of their success with them. At present, however, there is no specially made incubator for pheasants' eggs, and more good will be done by relying on a good service of broody hens, of the approved type, than in experimenting with the "new-fangled" hotwater machines. A large amount of ill success in pheasant hatching is due to the unpractical custom so largely obtaining of putting the fowls to sit in hot ill-ventilated hatching, and other houses. The eggs do not receive natural treatment under these conditions, many chicks die in the shell, and many are born of such weakly nature that they are unable to maintain existence. The common fowl, if allowed her own way, chooses a nesting place where there is free access of fresh air and moisture, and no chickens ever reared can compare with those hatched out in a "laid away" nest. How much more this is the case with pheasants is obvious, and in seeking to obtain, as nearly as circumstances will permit, natural surroundings for his pheasant hatching, the preserver gains an important point.

It must be confessed we cannot well put one sitting hen here and another there, on a hedge-top, in the corner of a grass field, &c.; regularity and order in the arrangements being necessary. Under the circumstances, where any large number of fowls are set on pheasants' eggs, it is best to contrive a sort of sitting shed in which the various hens can be placed while incubating. As this is an important point, and one, as we said before, often pregnant with failure, we do not hesitate to recommend a plan of sitting house, which,

although entailing some expense, is an entirely good one,

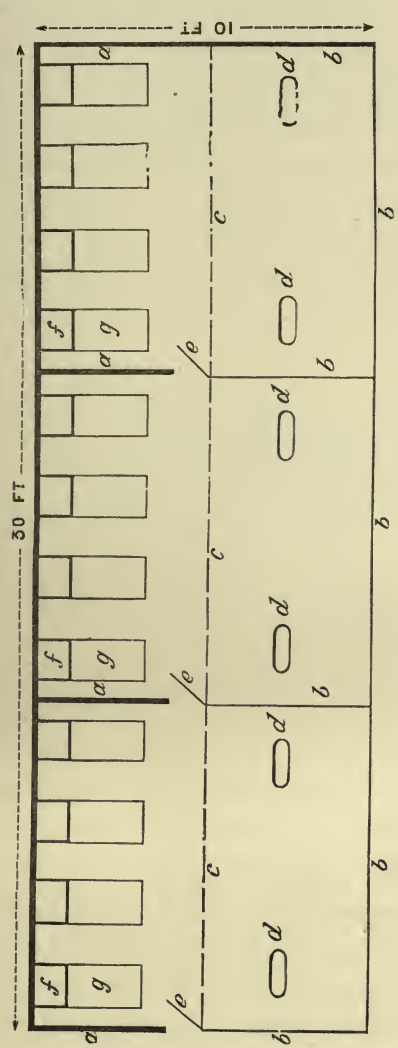


FIG. 1.—GROUND PLAN OF HATCHING HOUSE.

a a a a, Wood.
b b b b b b, Wire netting.
c c c, Limit of roof.
d d d d d d, Food and water troughs.
e e e, Doors.
f f, Hatching boxes; and
g g g, Runs to same.

and quite necessary where any large stock has to be raised.

At Fig. 1 is given a plan of a 30ft. long hatching house, combining all the desirable qualities of such an erection, and which will, if necessary, accommodate twenty-four sitting hens at one time. In the illustration boxes for only twelve hens are depicted. It may be as well to give further details of the construction than are set down in the references. The back if possible should be a stone or brick wall, but this is no *sine qua non*, and it can, with equal utility, be of wood, as are the sides and divisions (*a a a a*). The former need not extend right up to the roof, a height of four feet or so

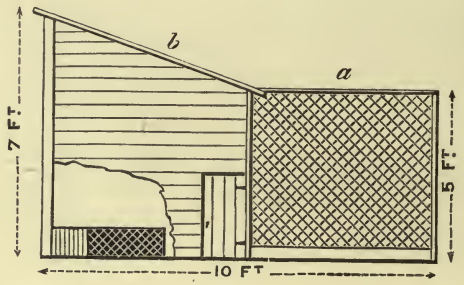


FIG. 2.—SECTION OF HATCHING HOUSE.

being amply sufficient. The side and front portions marked *b* are of wire netting, boarded up one foot high all round, as shown at Fig. 2, while the outer roof (*a*, Fig 2), is of the same material. The inner roof (*b*, Fig. 2), and which extends only half way across the pen, is of board overlapped. At *e e e* (Fig. 1) are doors by which to pass from one division of the pen to another, the object of dividing them being that when the sitting hens are let off in the morning, one can, by allowing half of them out at once have but two or at most four hens at a time in each division off their nests, and so

avoid the worry and disadvantage which would accrue were the whole lot of hens turned off together, or were it necessary to let out but two or three at a time, and, furthermore, the small limits of the pen preclude any unruly hen from eluding capture when she seeks, intentionally or otherwise, to allow her eggs to become cool.

As will be seen, the hatching boxes are placed equidistant from one another at the back of the pen. They may, with advantage, be of one or two descriptions. The first (see Fig. 3) is easily made, and is simple in design.

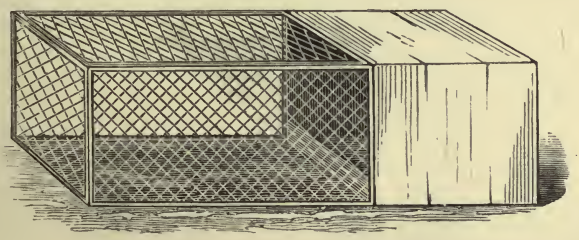


FIG. 3.—HATCHING BOX.

It consists of a small run covered entirely with rat-proof wire netting and a bottomless nest box. This is 15in. square and 18in. high, and it is desirable that it be sunk 3in. in the ground, so that vermin cannot get underneath at the eggs, and the nest is made on the soil and not on hay or other lice-causing material. When the hen is sitting she can be provided within the small run with water and food in case she should desire it between meal times, and is thus able to obtain it without having to stray about the pen, where there is no wire guard. Some ashes or other suitable dusting material may be placed in the run as well, but as the bottom

is covered with wire netting, one must be careful to see that it fits tight up to the box when being replaced after removal. It may be twice the length of the box, or 2ft. 6in.

Fig. 4 is another kind of box, which does away with the wire run. It is generally made 15in. square and 18in. high. The bottom is covered by rat-proof wire netting, and the door is similarly provided. A turf, hollowed out in convenient form, is placed in for the nest, as it provides the

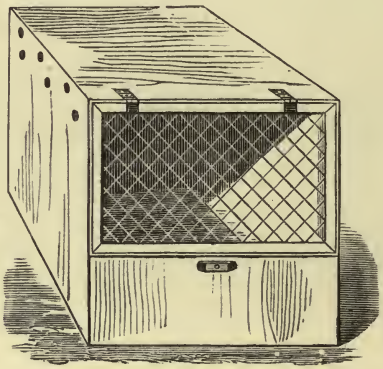


FIG. 4.—HATCHING BOX.

necessary moisture as well as being the best thing on which to hatch out eggs.

Various numbers of eggs are recommended as the best to give to the sitting, some advising much too large, others considerably too small a number. We consider fifteen pheasants' eggs to be a fair and desirable sitting for a crossbred hen of the type advocated, and if she prove at all a good sitter and mother, it is more than likely all the fertile eggs will be hatched and the young reared. The day

the eggs are set in each box should be carefully noted, and if a hatching house be used, a record may, with advantage, be kept and daily posted up as to all the dates, numbers, &c., of the eggs, and any little circumstances of interest which may occur during the hatching time. Every morning at the same time the hens must be taken off and fed. They should not be allowed to return to the eggs too quickly, but the nest should get its proper supply of fresh air. No sprinkling or turning of the eggs is required. The only thing necessary is to copy the natural order of things as nearly as possible; it is the best and only reliable plan, strict observance of which may warrant one expecting success. It is a recommendation worthy of adoption to bore a row of holes round the bottom of the sitting boxes on a level with the eggs, so as to admit a free current of air through them.

When the hens are feeding, or after, they should be provided with a dust bath and water. Some go the length of enclosing the hens under a coop with a pan of wood ashes and another of water, but it is obvious that what the hens want they will quickly find in the pen if it be present and available.

The food of the fowls must be good and plentiful, so that they sit steadily and comfortably. A daily bite of green food is highly beneficial.

When the eggs have been sat on not less than a week, and from the seventh to the tenth day, they should be examined with a view to discovering and removing the unfertile ones, and replacing them if possible. The testers which are in frequent use for examining hens' eggs are of little service for those of pheasants, the latter being too small. The best way to gain the desired information is to remove the eggs to

a dark room, and obtain a piece of stout cardboard or thin board, about one foot square, with a small oval hole of rather less dimensions than an average sized pheasant's egg in its centre, as shown at Fig. 5. Then obtain a lamp with a good bright flame and place each egg in turn against the hole in the board and subject it to scrutiny immediately before the flame. The fertile eggs will be all perfectly opaque with the exception of the small space occupied by air at the larger end. Any other of the eggs but the opaque ones are unfertile, and the clear ones, or unfertile eggs, must be removed, and their places be filled by fertile

FIG. 5.—TESTER FOR PHEASANTS' EGGS.

eggs from one of the nests set down for this purpose. The unfertile eggs can be put by to be employed as food for any young chicks already hatched out; they can scarcely be kept until the present sittings come off.

When setting down a number of hens, it is advisable to set one more lot than is needed, as that can be retained for the purpose of contributing eggs in place of the unfertile ones in other nests, which may thus be kept up to their proper complement. Should this odd hen be left with two

or three eggs over, they can, with advantage, be distributed amongst the other nests, and the hen receive a fresh sitting. One spare sitting to each five or six hens will in most seasons be required, but pheasants' eggs show a much larger percentage of unfertile ones in some seasons than in others.

Before the last—that is the twenty-fourth—day arrives, arrangements must be made to receive the newly hatched out pheasant chicks, and a sufficiency of coops, appliances, and foods provided, so that there is no overcrowding and starvation for the youngsters to battle with at this tender age. During the time of sitting, and for twenty-four hours after the twenty-four days of incubation, the hen must be absolutely unmolested, except at feeding time. There is nothing more unpractical, valueless, and productive of bad results than to interfere with the hatching hen, and we once for all affirm that if the would-be rearer of pheasants wishes to succeed in his endeavours, he must leave his sitting hens to incubate and hatch out their brood in their own natural way.

When the hens are in hatching boxes, on the morning of the twenty-fourth day some food may be placed in the small runs attached to the nest places, so that as soon as the chicks want to pick up a little provender they may be able to do so. This first food must consist of custard, if the much-to-be-desired supply of fresh so-called ants' eggs is not forthcoming, but it is in this instance simply to be placed in the runs for the chicks should they want it.

After the twenty-four hours have fully elapsed, the hen and brood must be removed to a coop. The form this should take has been often discussed, but it seems to us that it should meet several requirements. In the first place, it must

be roomy, so that the hen may not tread upon or knock about the chicks when she moves; it must furthermore be dry, both from above and below, and unless the coop be daily moved, it must have a movable wooden bottom, which can be taken out and cleaned every day. The run attached to the coop is an equally important matter; it must be, above all, vermin proof, and ought to be partially covered, so as to afford shelter from too much sun and from rain.

At Fig. 6 is an illustration of a coop and run of the desired type, which combines in a compact and handy form all the necessary attributes of such a contrivance. Its measurements are: Coop and shelter, 5ft. long, 2ft. 6in. wide, and 2ft. 6in. high at the ridge of the roof. The run may be from 3ft. to 7ft. long, and for the ordinary requirements of pheasant rearing should be of the latter length. These coops consist of three portions,—the coop proper, the shelter, and the run. The coop, as will be seen, measures 2ft. 6in. deep and wide, and is boarded over one-third of the front on each side, the remaining portion having iron bars to retain the hen. At the back is a door, which should extend right across. The coop is furthermore provided with a movable wooden floor. The shelter consists of two side frames, a front piece, and the roof. When the side and front pieces are removed the roof falls down over the front of the coop, forming an efficient shutter. When the run is placed before the shelter, the front portion is removed. As cannot fail to be remarked, this is a thoroughly good coop in every way, and we can speak from personal experience of its many good qualities and general usefulness. It is dry, affords abundant shelter, is not stuffy and unhealthy, and is easily moved about. The

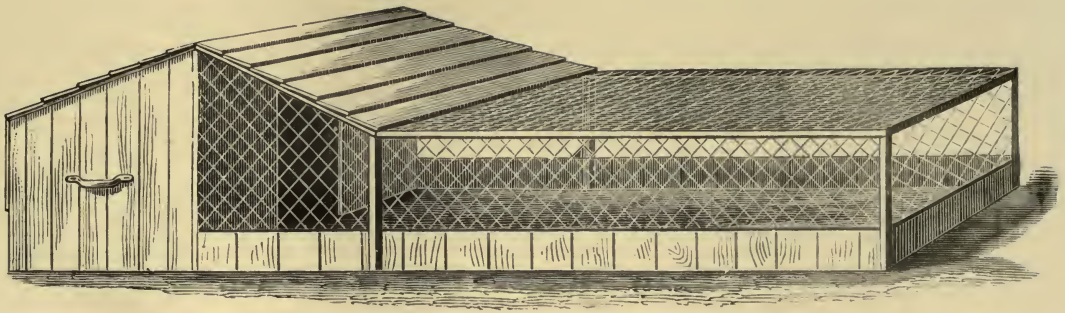


FIG. 6.—REARING COOP AND RUN.

To face p. 32.

makers are Messrs. Boulton and Paul, Norwich; the retail price, when several are taken, is 30s. each, and they are extremely cheap.

To these coops the broods must be removed as soon as they are the necessary twenty-four hours old, and they can then be provided with food. For the first two months this must consist of custard as the staple Hard boiled eggs are generally used, but they are at the best of only third or fourth-rate merit, and it is much to be desired that their use may become less extensive. Custard, to be in suitable form for young pheasants, must be made in the following manner. Beat up thoroughly six eggs—not stale ones—in a basin, then beat about half a pint of new milk in a saucepan, and as soon as it boils pour in the beaten up eggs slowly, stirring the whole over the fire till it thickens up into a firm custard. This at first may be given alone to the young chicks, but after three or four days oatmeal must be boiled in the milk in small quantities, say, a table-spoonful of meal to start with, increased to twice that quantity by the end of the first week. Until they are three weeks or a month old the food may be a mixture, consisting of one-half custard, and the other of equal parts of two or any of the following: Crushed wheat, boiled rice, barley-meal, oatmeal, groats, millet, bread crumbs, dry dough, a little chopped lettuce, spinach or onion out of the garden, bruised hempseed, buckwheat, boiled potatoes or artichokes chopped small, dari, a little rapeseed. All or any of these multifarious foods may be given with benefit, or the rearer may make up several foods embracing all the above, and give them either at different times in the day or on alternate days.

It should be borne in mind that it is advantageous to increase gradually the dry foods at the expense of decrease in the custard, until the chicks are two months old. About a fortnight before this, the feeds of mixed food should be reduced to one in the middle of the day, barley and wheat to take the place of the others. After two months the birds are put on dry grain as their staple food.

Below we give a table showing the plan of feeding we advocate—not as a hard and fast rule, but as an example to the inexperienced, of feeding young pheasants with a view to keeping them always growing and progressing, for in this lies the secret of successful pheasant rearing. Once the youngsters stop progressing, look out for gapes, chills, and all sorts of ill-luck.

TABLE OF FOOD FOR YOUNG PHEASANTS.

Age of Pheasants.	Morning Feed.	Midday Feed.	Evening Feed.	Remarks.
Up to 3 days	Custard	Custard	Custard	A slight sprinkling of oatmeal may be added if thought advisable.
3 to 7 days	Custard and meal	Custard and meal	Custard and mea	The meal to be gradually increased.
7 days to 3 or 4 weeks	Custard Crushed wheat Millet seed Chopped lettuce Bruised hemp Chopped potatoes	Custard Barley meal Boiled rice Onion Dari seed Chopped artichoke	Custard Oatmeal Groats Buck wheat Rapeseed Dry dough	But two of these need be added to the custard, or the separate diets can be alternated day by day or every three or four days.
1 month to 2	Wheat and (*or*) barley	Custard and meal	Wheat and (*or*) barley	
2 months to 6	Maize Barley Beans Green food	Dari Oats Maize Green food	Maize Peas Wheat Green food	These can be given on alternate days or changed week by week.

The above, as we said, is not of necessity to be followed exactly. Circumstances may not permit of it, but as an example of a course of feeding it is a good one.

Ants' eggs are always a desideratum for young pheasants, but their scarcity, and the difficulty of obtaining them in sufficient quantities, prevents their extended use. As a substitute, Spratts "Crissel" may be given, and for this purpose is a very useful food, or rather condiment. Of the many prepared pheasant foods, the less said the better, they are for the most part expensive and inferior to good honest grain, &c. As an occasional change, Spratts and Chamberlin's can be recommended, but for our part we prefer to leave them alone. Meat, greaves, &c., are objectionable, but broth made from wholesome meat bones is beneficial and desirable to mix occasionally with the food of pheasants at an early age. Gentles are only of use when the birds show signs of binding, in which case a few prove an effective and simple purgative. As a food they are useless. More pheasants have failed to thrive and have died off through the oft recommended feeding with gentles than from any of their little ills, gapes, perhaps, excepted.

The proper time for feeding varies. Until the youngsters are about a week old, six or eight times a day is not too often, but by the end of a fortnight or so, we like the feeds per day reduced to three. These may be given morning, noon, and night. Most pheasant rearers recommend the first to be given as early as possible in the morning, but we much prefer about eight o'clock, as one has time to get things in order, and furthermore there is no advantage gained by bringing out the chicks very early. The second feed we would give at about one o'clock, and the last between four and five. We always put in a little fresh food after each meal, to which the chickens can resort between whiles if they choose.

As to how the food should be given, opinions differ ; some throw it down in the run of the coops, others place it in saucers, or similar vessels. The best way is to have some shallow food tins made of thin galvanized iron, to measure 12in. long, 4in. wide, and 1in. deep. These keep the food clean and sweet, and in order to protect it from the sun or rain, a piece of board should be laid across the run above the food tin. Absolute cleanliness with regard to the food is necessary, and every tin should have been washed before anything is put in it. In addition to this, every pen or alternate pen should be provided with a similar tin to contain a dusting bath, filled with fine gravel or clean road grit, and containing in one corner a small piece of rock salt.

Regarding the necessity of water for young pheasants, a large amount of disputation has been and is always going on. Some say it is indispensable, others that it is deleterious and causes gapes. As a matter of fact, we consider young pheasants thrive much better when they receive water, but it must be the cleanest spring water, and not allowed to stand in the runs. The only way to give it satisfactorily is to carry a can of it at feeding times, and give each brood a drink in a saucer when the food is put in, taking care to remove it before leaving. If spring water cannot be got, then we would give no dead water unless previously filtered.

The place for a ground whereon to keep the coops for the first week is generally difficult to determine. It should be borne in mind that for the first week the chicks require constant and assiduous attention, therefore they should not be far from the keeper's house. Further, the site must be dry and healthy, well open to the sun, and sheltered from

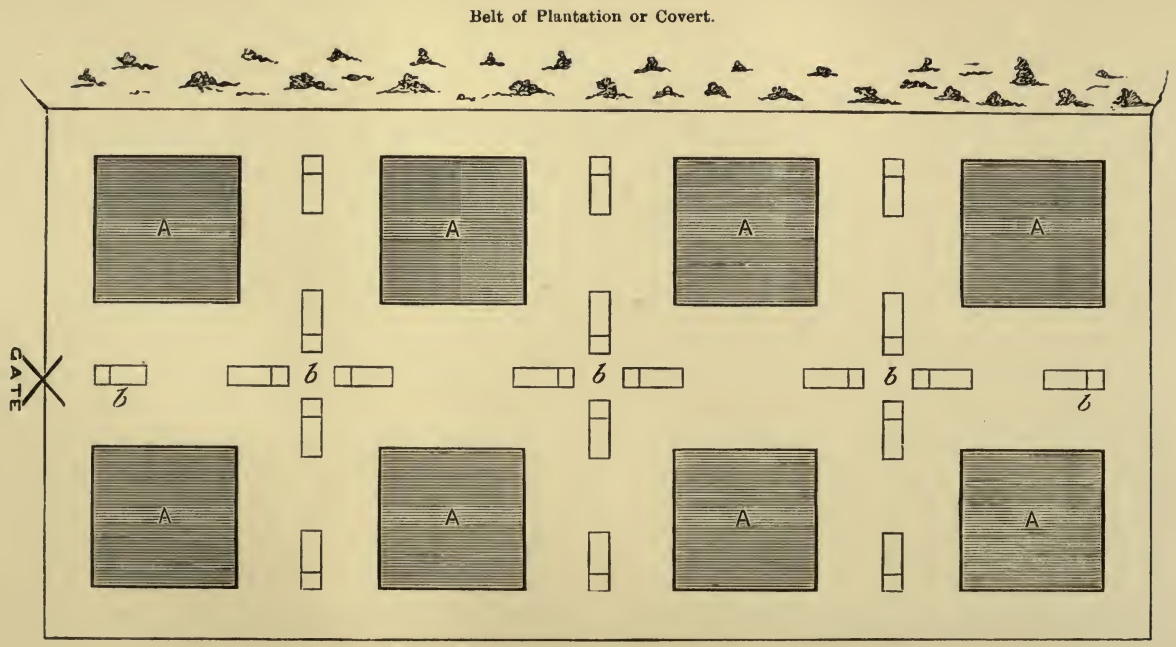


FIG. 7.—PLAN OF FIELD FOR REARING GROUND.

AAA, part left unmown; *bbb*, the Coops and Runs, in which are the Pheasants.

To face p. 37.

cold winds. A not too closely planted orchard, and particularly one of young trees, is a very suitable spot. A well walled enclosure is, of course, desirable, but not a necessity.

As soon as the coops are tenanted, a look-out by day and preparations at night must be arranged for the reception of any kind of vermin which may be attracted to the spot. They will probably present the shape of cats, rats, or dogs—the latter of the sheep dog description. It is always necessary to set a gin or two adjacent to each coop, so that if anything should come it may find a welcome.

When the birds are a week old they must be removed to the rearing ground, where they should remain until they quit the coops and start off to find a subsistence for themselves. The best possible rearing ground is a small field, about one or two acres in extent, of seeds; that is of permanent pasture in its first season. It is desirable, however, that the long rye and other grasses, tall growing, should predominate, and "a thin field of seeds" be the result. On an estate where large numbers of pheasants are annually reared it should be so arranged that there is always this *beau-idéal* of a raising ground; and if a couple of acres be broken up and seeded out every fourth year this desideratum will always be at hand. The presence of some covert, a belt of plantation for instance, on one side of the ground is of great value. As soon as the young pheasants are ready to go out in their coops, or rather just before, this ground must be partially mown, according to the plan shown at Fig. 7, or in some similar manner. Of course, there is no necessity to follow exactly the plan prescribed; but if a small field be available of the description previously given, and

it be worked as advised, every element of success in rearing strong healthy birds will be present.

When a week old, the chickens are removed in their rips to this rearing ground, and when they have attained a further seven days' growth, the outside runs can be removed, and the chickens attain freedom to roam about where they will. The whole day long, nearly, they will run about the unmown portions of the field, picking up countless little seeds and insects which would otherwise be debarred them. For the first month care must be observed not to let them out of the coops till the dew is off the grass, and to get them in before it rises in the morning. Wet caused by a shower of rain does not matter, but the dew must at first be certainly avoided.

As the youngsters progress towards maturity, they will commence to roost about, not in, the coops, and the benefit of a bit of young covert adjacent is then obvious. At all times the most assiduous watching is necessary against both human and animal depredators. The former will, doubtless, be on the look out at night when the birds are leaving the coops, but the latter will be on predacious intent at all times. By day, crows, magpies, and the weazel tribe; at night, cats, dogs, and foxes, and the ubiquitous mustelidæ as well. The nearer the field to the keeper's house, or the dwelling-house and other buildings the better, for there is no doubt that this materially protects the coops from the attacks of some sorts of vermin. In any case, each coop or run ought to have a gin or two tilled near it every night, and the result will prove that "one bit makes half a dozen shy."

Of course, if there be no handy field of the kind advocated, recourse must be had to some other description of ground,

and we know of none more suitable than a nursery plantation of young trees. The site chosen for this is always well sheltered, and yet well open to the sun, and young pheasants always rear hardily and well on it.

As soon as the young birds are half grown they must be transferred to the coverts. Each hen and her brood are conveyed in the coop to a ride, or any other similar suitable place, and left to take their chance as far as vermin is concerned. They are fed twice or three times a day, and free egress given them from the coop at all times until none of them any longer roost with their hen, upon which coop and hen are brought away and the feedings gradually broken off till the young take their food with the old birds in the coverts. The thicker the covert adjacent to where the youngsters are turned down the better, but it is almost impossible to find this for all the broods, and one should place the coops in as inconspicuous a position as possible in the rides, &c.

We have now, we believe, touched on all points of the hand-rearing of pheasants. We have, moreover, adhered to one defined system, and not drifted into the unpractical groove of half describing a dozen different plans. Nearly every keeper and preserver has a different "dodge" for this, that, and the other detail, but if one wants to rear large numbers of pheasants—and for what other purpose is hand-rearing necessary?—there is nothing like adopting one particular plan, and working it out with modifications suited to one's own particular case.

CHAPTER V.—PHEASANTS.

Diseases.

THE majority of the diseases from which pheasants suffer limit their attacks, for the most part, to hand-reared birds, and that whilst in the earlier stages of existence. These diseases are chiefly epidemic in character; and result, more or less directly, from unfavourable conditions of weather. In its natural state, or, we should rather say, when reared in a natural manner, unaffected by any help from the hands of man, the pheasant is an extremely hardy bird, and very free from disease—more so, probably, than any other of our game birds; but this hardiness is, to a large extent, brought about at the expense of the weaker birds, hatched out in the natural broods, for unless they are well up to the standard of excellence of strength and constitution, they soon lose the necessary maternal care, are neglected, and die. Consequently, only the strong, healthy chicks are reared, resulting in hardy birds eventually. With coop-reared pheasants the case is altered. The weakly and sickly birds are helped on with the rest, and if there be a chance of any disease or ailment, these unfortunate youngsters are

sure to be the foremost victims. The chief causes of most pheasants' ailments is wet, either in the form of continued humid weather or dampness of the ground. The former, unfortunately, we are unable to control, but the latter is always preventable, and therefore to stand coops in damp places is an unpardonable mistake, which is sure to bring about its own punishment sooner or later.

The malady which most often arises from the cause just mentioned is cramp, which usually affects young birds in cold, damp seasons. As its name implies, it is a drawing up of the legs, rendering the bird powerless to move. Generally we have found one leg affected before the other. Prevention is effected by keeping the birds well sheltered in their coops from rain and cold winds, and by taking care that the ground inside is dry. If this cannot be kept free of humidity, then it is best to board across the bottom of the coop an inch or so from the ground, fixing the boarding so that it can be easily removed for cleaning daily. This is best effected by nailing two strips of wood about 1 inch thick along the bottom of the sides of the coop, and then laying some properly cut pieces of board across. The birds, during the weather which may cause cramp, must be liberally fed, and the addition of a little warm broth and rice, boiled daily, will help them along. When the birds are touched with cramp it is best to remove them to a warm place. For instance, put a piece of sacking that has been well warmed at the fire, in a basket; place your chicks in this, and keep them in a warm room for a few hours, giving them the above food. When they are recovered, put them

back in the coop, but see that it is properly dry, and remove it under some shelter if necessary.

Cold is brought about by the same causes as cramp, weakly birds being more liable to acquire it—and cramp as well—than strong, hardy ones. The treatment must be the same as for cramp, but cold must be attended to at once, for, if neglected, it will develope into roup. When birds are suffering from catarrh, there is a slight discharge from the nostrils, but when the malady is disregarded this discharge increases, and acquires a purulent form, when it becomes capable of imparting the infection of roup to other than the afflicted birds. It is very advisable, seeing what cold may develope into, that its first appearance among a brood should be the reason for giving the youngsters a little strengthening medicine, in addition to the improvement in food provided for them. This medicine should take the form of some citrate or sulphate of iron given in the water, in the proportion of 1 drachm of either drug to a pint of water. This may be given daily during the continuance of bad, unfavourable weather.

Once the roup, however, has made its appearance, stringent measures must be at once adopted. If but few birds shown signs of having it, the best way is to at once destroy them, and remove those which were in their company away from the rest of the broods. If, on the other hand, the malady attacks many, some endeavours may be made to cure them. They must be removed entirely from those remaining unaffected, and receive a stimulating diet. Wash the discharge from the nostrils away as often as necessary, and give each bird half of one of Baily's Poultry Roup Pills

twice a day. No doubt, a large number of the birds will die, but some will recover and grow into fine strong pheasants. When the attack is severe and general, there can be nothing lost by endeavouring to save a few from this scourge.

Scrofula is a disease which occasionally overtakes the stock of those preservers who seek to rear the young birds on tainted unhealthy ground, trust to unhealthy birds as parent-stock or indulge in the process of in-breeding to an unwarranted extent, that is, fail to introduce at the necessary intervals the fresh blood amongst their stock which we have already declared to be indispensable to the preserver of pheasants in large quantities. It generally takes the form of tubercles in the liver, but in some instances all the well-known symptoms which characterise scrofula in fowls have been developed. The only way to obviate an outbreak of this malady is not to neglect the required introduction of fresh blood amongst the stock, and to be careful that the rearing grounds are not tainted.

Young chicks often suffer from vent binding, and if careful attention is not given them, the vent feathers properly cut off, and the parts treated with sweet oil, a good deal of mortality will ensue. One must always have an eye for this, and if one or two are discovered to be affected, the others should be examined, as the causes are sure to be present.

We now come to the consideration of that direful malady known as gapes, which, in truth, is the great bane of pheasant rearing by hand. With the nature of the disease everyone is acquainted; and there is no necessity to enter upon an elaborate description. It may be as well, however, to state

that gapes receives its name from the continued gaping of the chicks affected. This is due to the presence of some small worms, termed in general, entozoa, within the wind-pipe. They are usually from six to nine in number and congregate in a small knot, so as considerably to obstruct the passage of air. To remedy this, the chick gapes, thereby, doubtless, causing the worms to partially separate, when it again breathes with greater freedom until the worms again form up, and another gape becomes necessary. In time, the increase of size and strength in the worm, and failure of energy in the afflicted bird, with inflammation in its throat, contribute to render the gaping impossible, and it quickly suffocates. In the case of very young birds, the disease soon kills, but after the chicks are six or seven weeks old, they have acquired greater power to cope with the malady, and may struggle against it for some time, but sooner or later it is sure to prove fatal.

The origin of the gape-worm is undecided, but there seems little doubt in the minds of scientists who have given the matter their consideration, that it is parasitical in other forms of being prior to its entry—supposed to be through the nostrils—into the wind-pipe of the pheasant chicks. Some affirm it to be born in the body of the fowl louse, which equally affects the pheasant, and is thus originated on the birds. Others maintain that it is present in water or on the pasture. Anyhow, for the present its origin is not definitely determined, and we must make up our minds to combat the malady by the light we have. In the first place, it may be well to state that, according to all accounts, gapes is more prevalent in a warm humid season than in a

cold one, and, further, although a due regard to cleanliness and disinfection of the coops and runs is to a large extent preventative, too great reliance must not be placed in these precautions. Pheasant rearers may, however, rest assured that gapes is both preventable and curable.

In the matter of prevention, in addition to the usual precautions, a system of treating the young birds has been advanced, extensively tried, and found thoroughly efficacious in warding off the malady. It appears that young pheasant chicks have over and over again been noticed to be afflicted about the head with a species of lice, and that if these lice be destroyed, the chicks are never attacked with gapes. It is further put forward as a theory that these insects, whencesoever acquired, provide a host for the gape-worm, which, escaping from them, enters the nostril of the pheasant, and thence reaches the trachea, where it takes up a permanent position and grows rapidly. This, of course, is pure supposition, but it is a fact that those who have given the theory credence have adopted the preventitive treatment recommended, and succeeded in rearing chicks unattacked by gapes, where they formerly lost large numbers. The treatment recommended is to anoint the young pheasants with the following ointment:

Mercurial ointment	1oz.
Pure unsalted lard	1oz.
Crude petroleum	½oz.
Flowers of sulphur	½oz.

This is gently rubbed, in a half melted condition, into the head of the newly hatched chick, as soon as it is strong

enough to place out in the coops. The effect is to prevent or kill the insects, it is said; in any case, gapes never follows its application. For further information respecting this matter, vide "Poultry for Prizes and Profit," Cassell's "Book of Poultry," and *Live Stock Journal*, June 30th, 1882, to which we are indebted for the above particulars. Personally we have depended solely on cleanliness and disinfection as a preventative.

The cures for gapes are several and easy of application, but the disease must be taken early in its course, or its weakening effect on the young bird proves fatal. Turpentine, when the disease has not made a severe attack, and carbolic acid, when it has, are the most reliable. There are many other modes of removing the worms, more or less effective in their way, but we much prefer the two named. To cure gapes with turpentine a little patience, and some skill are necessary. Immediately an afflicted chick is perceived it must be treated. One person holds the bird, opens its mouth, and with a little cotton wool, or piece of worsted-thread, holds the tongue well forward. The second obtains a soft flight feather and deprives it of its vane to within ¾in. of its extremity, dips this in spirits of turpentine, and pushes it down the bird's wind-pipe not more than 1½in. to 2in. according to the size of the bird, turns it two or three times and withdraws it, twisting it round all the while. Properly done the cure is complete, the only care to be taken being not to strangle the bird, and to destroy by burning all the entozoa withdrawn by the feather. For proper and satisfactory application of the carbolic-acid cure, obtain a small box about eighteen inches square, and one foot deep, fit to

it a sliding glass top, and have a small sliding door at one end. At the other, divide the box over for 4in., half its depth. When you have any gape-affected young birds, heat a brick, flat stone, or piece of slate, nearly hot enough to singe the wood, place this in the partition at the end, and drop on it six drops of carbolic acid. As soon as the box fills with dense fumes, put in your affected bird for two or three seconds, but take care not to suffocate it. Immediately it is withdrawn put it in the fresh air, and in a few hours it will be as well as ever, and entirely free of gapes. Extracting the worms with horse hair, wire spirals and the like, is best left to those who recommend the plan. The only reliable resource is to acknowledge the value, and practise the use of, turps and carbolic, and losses from gapes will not be very formidable.

For inflammation of the eyes in young birds, feed low for a week, and bathe the eyes twice daily with a weak solution of zinc chloride.

Mature pheasants are perhaps the hardiest birds existing, and never seem to die of anything but old age, and violence at the hands of man or predatory birds and beasts. Sometimes they will pick up shot in the coverts and die of lead poisoning, and sometimes they prefer to feed on injurious not to say poisonous plants, such as yew, and pay the consequent penalty; but with ordinary good management and avoidance of the errors we have pointed out, a stock of pheasants will succumb only to the above-mentioned causes.

CHAPTER VI.—PHEASANTS.

Coverts.

NO one would attempt to preserve pheasants without the requisite amount of covert, nor would anyone who has already obtained a head of birds upon his land expect to maintain them without due attentions to the proper condition of his coverts. Of the particular descriptions of woodland most suited for the purpose we have already spoken, but it is to be added that these are capable in very many instances of considerable improvement. Of the nature of this we shall speak presently. Meanwhile, one or two words with regard to the formation of pheasant coverts. We will not, of course, enter on a dissertation more suited to arboriculture than pheasant rearing, but we may at least furnish those who contemplate planting coverts for pheasants with a few hints as to the most suitable form they should take.

The best aspect for a pheasant covert is a S.W. one, and the best position, the side of a hill, or on undulating ground facing the S.W. quarter. The land should be dry, without being sterile, and must be intersected by running

water at intervals. If there be a spring anywhere near the highest point, it can be utilised by being held back in dead level leats, cut through the covert. When planting two descriptions of trees must be put in, one to form the wood, the other to provide a cover in the shape of undergrowth. Of the former, the bulk must consist of thick growing trees, to provide, not only shelter for the birds from cold or wet, but roosting places, and protection from the eye of the night poacher. It has come to be recognised of late that although larch is a quick growing, hardy, useful tree in the formation of pheasant coverts, it is not altogether an unmixed good, as, consequent on its particular form of growth, it not only provides a most enticing roost for the birds, but one which renders them very conspicuous objects on a moonlight night and as easily discernible by the poacher as in day time, and it is the night poacher who deprives the preserver most quickly of his birds. There are so many ways of obtaining them besides the dangerous one—as far as discovery is concerned—of shooting the birds as they roost, that it is very desirable they be as little exposed as possible. We should therefore taboo the larch when laying out new plantations, or at least combine larch and other similar trees with those of thick dark foliage, that the one may form a protection to the other.

A preliminary, prior to planting out your land, is to render it somewhat uneven in its surface, such irregularity possessing many desirable attributes. This is best effected by ploughing the land into sharp furrows. The next step is to sow it over with various kinds of bramble, berry, and the like, to provide ground cover and food for

the birds. Then commence the planting, using the following trees: oak, ash, beech, silver fir, spruce, Scotch fir, larch, holly, hazel, birch, sycamore, and apportion them according to the locality. There is no doubt whatever that if a thoroughly protective pheasant covert be required, the resinous trees must occupy the greater portion of it; and the hardwood and undergrowth trees be provided rather as a relief from the monotony of the others, so as to lend variety to the plantation. There is, probably, no more difficult task than to produce an undergrowth in a wood where none exists; consequently shrubs, briars, and the like should be carefully encouraged as soon as the trees commence to make headway. It is much easier to cut them out later on than to introduce them. The young trees should not be allowed to grow too thickly, and any which show signs of dying are best cut out at once.

The improvement of existing coverts is a matter which must always command the attention of the preserver, and in acting with that motive he must bear in mind that three ends are to be kept in view—actual improvement of the plantation, the rendering it more adapted to sporting purposes, and the offer of greater inducement to pheasants to frequent it, with protection for them when doing so. On the first, we need not say more than that the preserver must consult a work on arboriculture for any information he may require for the improvement in his woods; but on the second, more may be said, and the chief point of interest is the formation of drives or rides. The non-sporting landlord, in general, has acquired certain peculiar notions with regard to these drives or paths, and if the unhappy preserver happens

to be tenant, and not owner, of his estate, he will meet with endless opposition should he seek to cut out these paths; however, tact and resolution in pursuing the desired end will work wonders. There is this advantage, moreover, that a tenant rarely goes to work in the wholesale manner in which some owners do, the result being more harm than good. The chief aim in cutting a drive is to secure positions from which fair shots can be had at either furred or feathered quarry, and to provide easy access to such portions of the covert as may be desirable. The great evil to be avoided is the opening up of the covert to the weather. There is a bad quarter everywhere, and the storms from this quarter should never be able to hit straight into the heart and home of the stock and the centre of the covert; otherwise there is an end to anything like a head of game and a thriving wood.

The next point is the thinning out of, and adding to, the trees. Wherever there is a blank space it should be filled up, and the best way to do this is to dig out one or more hollows to a depth of about three or four feet beneath the level of the soil, and plant three or four silver fir or spruce in the centre. They will soon grow up beneath the shadow possibly of others around them. The thinning out is a more critical affair than many think. The great aim is to preserve an even thickness of foliage at the top of the trees, so that when one looks towards the moon or sun, at an angle of about $22\frac{1}{2}^{\circ}$, one could scarcely, and, but after close scrutiny, discover a pheasant perched on the upper branches.

In addition to the regular sporting rides, it is a great

advantage to keepers that there be some small clear foot-paths intersecting all the coverts, such paths to be free of brambles and bits of dead wood. At night time when all is silent it is a matter of impossibility to walk about a covert without stepping on dead twigs and boughs, which make a noise that would discover any poacher or keeper one to another. If, however, the latter has a clean, clear path to go upon, the advantage is manifest.

There should always be two or three comparatively thick dark coverts, or portions thereof, set apart as night coverts for pheasants, and which are never disturbed. These must consist largely, if possible, of spruce and silver fir, and if the pheasants can find a little food there at all times, they will soon resort to them regularly as a roosting place, quitting them, however, at day time for more congenial parts.

The hedges of pheasant coverts are a matter deserving of a certain amount of attention in relation to the practice of poaching. They should always be well kept. When hedges pure and simple, blackthorn or whitethorn are indispensable, as they alone can be grown and trimmed till impenetrable, while if the boundary consist of a hedgerow or bank topped by growth, it is equally important that it be well kept, and the higher and steeper the better. Large bushes and trees should never be allowed to grow on hedgerows. If the plantation is young and wants shelter, then the beech trees planted with this aim are best put a yard or two inside, where they will have an equally good effect. Furthermore, rabbits are best kept away from the banks around the pheasant coverts. They

undermine them and bring them down, besides inviting weasels, stoats, polecats, and the house pussies to pay visits continually, while the three first-named know but too well how to utilise the burrows to their own advantage.

CHAPTER VII.—PHEASANTS.

Protection.

IT is only when a head of game is actually raised that the duties peculiar to the preserver commence, and it depends, to a very large extent, upon his assiduity in protecting his property, whether his stock be maintained and increased, or whether it gradually dwindle away. This is more especially the case with pheasants. The inducements offered on all sides to poachers are many, and the ease with which the birds can be obtained, coupled with the opportunities their habits offer for attacks by vermin, combine to render the pheasant the most easily abstracted and most difficult of protection of all our game birds. Hence the vicinity of towns becomes fertile in the production of poachers. The man "in pursuit," moreover, is singularly ingenious and endowed with many resources; and it would be difficult to collect, within the present limits, a complete list of the various modes in use of poaching pheasants, some of which can be learnt only from the gentlemen who employ them. There would, furthermore, be no gain in noting them down in precise terms, and it must be left,

therefore, to the ingenuity of the preserver to discover them himself.

The poaching of pheasants may be divided into the two kinds of night poaching and day poaching, with egg stealing. The first-named is the most obnoxious and the most dangerous, both as regards the preserves and the preservers; for, from the comparatively modest person who strolls through the covert at night, accompanied only with a heavy stick, and with no aid beyond the light of the moon, night poaching ranges to the band of fifteen or twenty ruffians, who take the coverts by storm, bid defiance to both keepers and watchers, and resort to desperate means of defence at the slightest interruption of their nefarious proceedings. On estates where continual vigilance is the order of both the day and night, very little of the ordinary class of night shooting of pheasants can occur. The more extensive part of the business is impossible in coverts of the proper type, composed of thick spruce and fir trees for the most part, in which pheasants at roost are perfectly undiscernible. If, however, the coverts are of such kind as to expose the birds to view, then some of the various means applicable must be brought into use to prevent any wholesale slaughter. Of course, when one is able to ascertain that a particular night has been selected for a "go" at the coverts—and this is very often possible—arrangements can be made to provide a warm reception for the poachers, but, under ordinary circumstances, night watching is the only reliable plan of protecting large well-stocked coverts.

The manufacture of mock pheasants in large numbers,

and the placing of them on all trees where roosting birds would be easily seen, serve a twofold purpose. They prevent, to a large extent, the real birds from going to roost in trees so ornamented, and they cause the night shooter endless annoyance by wasting his powder and shot, and incurring all the danger of capture by keepers without any recompense. Mock pheasants are a real boon in this respect, and keepers cannot be better employed in their spare time than in making and fixing them up. There are only two descriptions of any good, those made of hay or such similar material, and the solid wooden ones. The flat mock pheasants, cut out of a plank, are next to useless, and the various modes of fashioning them out of cloth, and by stuffing old bird skins, may be similarly characterised. To make mock pheasants of hay, take a piece of wood about three feet long, and shape off about nine inches to a lengthened point to represent the tail. Then on to the remainder bind hay, with string or wire, in the shape of a pheasant's body, making it as near the real thing in form as possible, even if the outline be somewhat peculiar. These make-believes can either be tied on to the boughs, or a skewer of iron be driven through the body, wood and all, and the mock birds so fastened to the trees. We think the latter plan of fastening has the advantage.

There are several ways of making the solid mock pheasants, some entailing a large amount of work and practical experience of the turner's art. The most simple, and at the same time comparatively effective plan, is to take a piece of ripe larch pole, no matter the length, provided the diameter does not exceed 8in., nor is less than 5in.

Cut this into pieces of a foot long, in the manner shown at Fig. 8, by alternate cuts at 45deg. and 22½deg. Then set to work to form from each a bird after the fashion of Fig. 9. The sharp end (*a*) is cut off, and a tail of wood fixed on, ¼in. thick, 2in. wide, at the place of joining, tapering to ½in. wide at the extremity, and 1ft. long. A large number of these can be made at very little cost. Of course, there is no need to form the head accurately, as, unless alarmed, the head of the pheasant when asleep is almost concealed in the dorsal feathers, and is per-

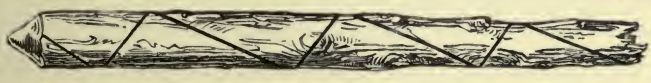


Fig. 8.—Manner of cutting Fir-pole for making Mock Pheasants.

fectly unnoticeable, but it is best to put some apology for a head, as mock birds likely to be shot at would represent pheasants alarmed by a previous report from the poacher's gun. To fix these up, choose a spot on the tree where the bird cannot be clearly seen end-on—only sideways—and this holds good of the other kind of mock birds. They can be nailed on by boring holes right through before the birds are formed up, and using very long French nails. These hold the bird firmer. The idea of leaving mock pheasants of this description loose on a kind of pivot is far fetched, and not nearly so satisfactory as nailing tightly on in a good position.

Fig. 9.
Mock Pheasant.

The next most fruitful cause of loss in pheasant pre-

serves is poaching without the gun; and this, although not often alluded to, is a class of poaching much more largely practised than would appear. It presents this difficulty, that it is only discoverable when the perpetrators are caught in the act. We have had personal chats with men who have worked this class of depredation, and had the various modes of procedure described in detail. One man said he had on several occasions, with two or three "pals," got upwards of a hundred head of pheasants in one night. On the course of procedure there is no reason for being communicative: but it may be well to say that no light is used whereby the keeper might be warned, and that the capture is effected by knocking the pheasants down from their perches. Here, again, we have evidence of the value of thick coverts as opposed to those of larch, &c. Naturally, young pheasants offer most opportunity for the exercise of this kind of poaching.

It is sometimes asserted that one system in practice entails the bringing down of the birds from their roost by means of suffocating fumes produced beneath them. We should fancy the deposition of small quantities of salt upon the extremity of the pheasants' tails might be as likely a means of capture.

The above comprise, for the most part, night-poaching. That kind of spoliation of the preserves practised by day consists mostly of hingling, egg-stealing, and netting.

Hingling is sometimes most extensively carried on, and often proves very successful. It consists simply of driving the birds into previously prepared snares. Either the poachers walk the birds forward through the covert, or

have dogs trained to do so. The general idea is that the snares or springes are placed at one end or side of the covert. This is erroneous; most execution is done by laying them about the centre. By this means, the birds are more thoroughly and safely driven backwards and forwards, which is often done several times in succession. In the early part of the year, when birds are being bought, they are taken in fixed springes alive, otherwise in the common snare.

Plain snaring may take place anywhere, where there is an outlying pheasant or two. Along hedges, on the sides of the brooks and wet ditches where the birds drink, or around the feeding spots. This kind of poaching is easy, expeditious, and wholesale, so the watch kept on the coverts must be continuous. Alarm guns are very useful by way of prevention in alarming the poachers, and giving timely notice to the keepers of the kind of work being carried on.

Netting is similarly practised. A long net is spread, and the pheasants driven into it by dog or man. It is not so effective as hingling, but it is a murderous procedure in experienced hands.

Egg-stealing is a class of poaching for the existence of which there is no necessary reason. The dishonesty of dealers, and the baneful practice of buying eggs from anyone and anywhere, are the principal causes. If those preservers who require eggs, whether it be a dozen or a thousand, would only buy from recognised reliable people, there would be no demand for stolen eggs, and this description of poaching would cease. Or, in a minor way, this might be effected by gamekeepers co-operating to put a check upon it, in refusing

to purchase such eggs from doubtful sources. Then, again, there is a certain amount of egg stealing by keepers themselves. Not that the percentage of men who are so dishonest is more than small, but it is certain that some men are idle, and prefer to sell eggs rather than rear from them, and the money goes into their pockets instead of to the preserving fund.

Besides this source of loss, there is that from mere destruction of eggs and young birds. The cause is generally a dissension between the master and his labourers; the bone of contention may be small, but the opportunities for retaliation are large, and an evil-disposed farm labourer can do an immense amount of damage. By a mere tread of the foot a whole nid is gone, and no one the wiser, nor any means of punishing the offender. It is always good policy, therefore, to keep in favour with the men about the farm and others who might be equally capable of committing mischief, and if a "bit of a row" should spring up about nesting time, then it is better to have the worst of it, or at least to conciliate the dissatisfied party, and keep him in good humour.

The chief means of protecting the birds from the several modes of day poaching alluded to must consist in continual and careful watching of the preserves. Nothing succeeds like this, and the keeper who is always turning up at odd times, and quite unexpectedly, on different portions of the estate, is more feared, and at the same time produces a more beneficial effect on any persons inclined towards the practice of poaching, than anything we know of. It is the practice of some keepers to have particular rounds, which

they traverse at certain intervals, with the result that it is extremely easy for poachers to avoid observation, and to shape their courses according to where they know the keepers to be. Regular night-watching is, of course, the only preventive of night poaching of the more extensive and dangerous kind; but for the prevention of it in its simpler forms, when practised by one or two men, who would sooner trust to flight than make an attack upon the keepers, who are off as fast as their heels can carry them at the slightest cause for alarm, there is no better means than the employment of alarm guns of some form or other, fixed in the coverts, while the construction of one man-trap and the reported making of a dozen, will excite a very lively aversion in the minds of many would-be marauders to the entry of the coverts in which they are placed. For further information relative to poaching we must refer our readers to the special chapter on the subject.

The other large destroyers of pheasants are vermin, nearly every kind of which is capable of exerting its evil habits in the preserves. The weasel tribe, in particular, cause a deal of damage, polecats, and stoats, killing young birds, and weasels being particularly destructive amongst the eggs. Rats combine the propensities of all, with greater daring and warinesss.

The "common," or "garden" cat is an extremely active depredator, and carries on its nefarious practices mostly amongst the coops, where it is sought to hand-rear the birds. The domestic cat generally works at night and often very successfully, while the farmer's dog, and the dogs of all the idle louts in the village, are equally alert at rearing time, and

the young birds nearly ready to go out suffer accordingly. Foxes, too, have their fingers in the pie pretty often amongst the covert pheasants, more particularly where no rabbits are permitted. But leave the conies in fairly plentiful numbers, and very few birds find their death at the paws and teeth of foxes. The magpie, the jay, the jackdaw particularly, the crow, the rook, even more so the sparrow-hawk, *et hoc genus omne*, each and all have their little turn at our protegés, the crow, and jackdaw, and hawks, at the young of all ages, the remainder at the eggs, and a considerable havoc they make if allowed their own way.

Of the means of protecting pheasants from these enemies by helping the varmints to shuffle off their mortal coil in as expeditious and wholesale manner as possible, we shall treat later on in a thoroughly exhaustive form. Meanwhile an axiom for the gamekeeper is: To destroy vermin is to preserve game; if you don't do the one, you can't the other.

CHAPTER VIII.—PHEASANTS.

General Management and Miscellaneous Matters.

THERE are several matters connected with pheasant preserving which require consideration, and as we cannot afford each and every one of them a chapter, we have put them together under the above heading. The most important is:

Feeding in Coverts.—Those who take up pheasant rearing and preserving for the first time must at once make up their minds that the providing of the stock with a sufficiency of food is an item of the first importance. If pheasants are not regularly, properly and considerately fed they will not remain, but move, imperceptibly no doubt, but no less certainly, to more hospitable and enticing coverts. It is during winter time, and the weeks preceding and subsequent to it, that this feeding becomes obligatory; consequently it is necessary that the arrangements made do not fail. There are but two practical ways of covert feeding, one to carry the food to the birds daily and feed them as one would fowls, the other to provide them with a permanent supply within the coverts from which they can help themselves. The latter

is the most desirable from many points of view; and we shall take it into consideration first. The best way of feeding on this plan is to form a sufficiency of small huts or food shelters about the coverts. They may take the form either of a fairly large shelter, or of a mere roof, over some bundles of unthrashed grain. If one has a large stock of birds, and small opportunity for providing a large number of feeding places, the best way is to put up four posts about 4ft. high, forming an oblong from 9ft. to 12ft. long, and half its length wide. On the top of these nail some flattened pieces to form what is termed the rafter-plate, cross-wise on these fix the rafters, after which the roof must be put on. If heather be at hand in sufficient quantity, then that is the best roof-thatch, for if properly put up it will last for years; but in the absence of heather, then furze or broom and faggots, or whatever can be got. On to three sides, leaving an end open, nail two small poles about one foot apart, and draw in between them so as to form a half open and half sheltering side, branches of willow bush, their ends to be about one foot at least from the ground. Inside the hut a low framework to support the unthrashed grain is put up, from 18in. to 2ft. from the ground. A hut like this will be a sufficiently large feeding place for 100 pheasants. It should be put up in some dry warm spot in the covert, where it would be well hidden from birds flying over, and protected from the roughness of the weather, and yet the surrounding wood be open beneath the trees, so that the pheasants may easily find, and come to it. The food given in a hut of this kind may be sufficient to last the number of birds feeding there, which can easily be observed, two or three days to a week. It

may consist of barley, buckwheat, and oats in the straw, some artichokes or parboiled potatoes on the ground, and some maize in a feeding hopper (of which more anon). When the weather is bad, snow and frost alike rendering food almost inaccessible, it is necessary to supplement the stock of grain in straw by carrying to the huts a daily quantum of other foods while the bad weather lasts. This may take the form of acorns, beechmast, raisins in small quantities, some turnip or mangold, these to be quite sound and free of frosting, and of other grain, say beans, dari-seed, pease, and wheat.

Another form of food shelter is a simpler affair, and is intended more for the purpose of keeping rain from the sheaf of corn beneath than to serve at all as a sheltered feeding place for the birds. Though the construction is simple, yet, if made carefully, these shelters will stand for years as a proof of their utility for the purpose designed. They are made in the same manner as the larger food shelter, but only measure 4ft. square or a little less. In the centre of the ground beneath the roof a stake should be driven in, so as to leave about two feet of its length projecting, and be pointed at its extremity. Upon this the sheaf of corn in the straw is thrust, and so prevented from falling when the pheasants pluck at the ears. The chief aim of this kind of feeding is to keep the pheasants as wild as possible. It is but natural that birds which depend for their sustenance during winter—and this is more particularly the case with the pheasant—upon food brought to them or provided daily by human hands, should acquire a certain, perhaps ill-defined state of domestication.

It is quite evident, therefore, that the plan of providing food huts within the coverts is least likely to induce this state of things. The disadvantage is that you cannot very well feed otherwise than with grain in the straw without over feeding the pheasants, and suffering great loss through consumption by other birds. It must be borne in mind that there is always present a larger or smaller supply of natural food in the coverts on which the pheasants can draw, and that for the most part the artificial food must but take the form of an addition to this, except towards the month of December, and through to the end of February, when the ordinary supply of food is practically exhausted; and then, unless the game birds are provided with a proper and sufficient substitute, off they wander far afield in search of it, and your coverts are quickly empty.

If for reasons which are considered sufficiently urgent the huts have to be dispensed with, then the birds must be fed by hand twice a day. This entails a considerable amount of labour and attention, as on extensive estates the visiting of the several feeding places twice in the day will consume a large amount of time. Under the circumstances we should be inclined to make exception to the rule, and feed but once, and that in the morning, providing sufficient food for an evening meal as well. The great disadvantage which attends this mode of feeding is the loss sustained consequent on wild birds consuming the food intended for the pheasants, and, unless one is careful, it sometimes occurs that the latter go hungry by reason of the former's energetic feeding. All modes of giving the pheasants food, therefore, should enable one at the same time to protect it from the ravages or

cravings of other birds. It must be remembered that the pheasant has a natural aptitude for scratching in the ground for a portion of its food, while the majority of other birds have no such instinct. If, therefore, we provide a floor which may hide the food, and be easily scraped back by the game birds, we shall be right. Having chosen the feeding site, the recommendations for which we have already specified, the proper plan is, when the regular winter feeding is first commenced, to carry out some oats and barley in the sheaf, and spread this about at the feeding place. Thence make some lures of chaff, containing a few grains of corn, the lures to radiate for some distance through the covert from the feeding place. The intelligent preserver will soon discover if pheasants have found out the source of a food supply, and can then daily carry the allowance of grain, mixed with its quantum of chaff, to the feeding spot, and scatter it round, so managing matters that as soon as one portion of the straw, &c., becomes sodden, another expanse may be chosen, and the offending matter removed or heaped up. In this manner any kind of grain can be given, and we should determine on maize and beans as the staple food. There is no doubt that in maize we have as fine and suitable a pheasant food as there is. The best kinds are the flat American "mixed maize," and the coarser sorts of Black Sea maize, Danube, Bourgas, or Poti corn. By all birds, except rooks and wood pigeons, these sorts of maize are practically unconsumable, but the sombre rook and the wily cushat are a terrible pair, and for persistent and audacious gormandising on food spread for pheasants, deserve all the opprobrium bestowed on them by keepers. Once they find

out the spot where the pheasants are fed, it is useless trying to keep them off; the only way is to shift the feeding place somewhere else. The pheasant feeders sold are not of much good for preventing wood pigeons and rooks eating the grain, but they possess a virtue in always providing a supply of food in case there are any hungry, perhaps starving, birds in the coverts. The cost of them is not great, and half a dozen or so put about the preserves in winter ought to pay for themselves.

The question of water in the coverts, or near them, is one of vast importance, and unless the preserver can see his way to having a never failing and plentiful supply—plentiful in so far as concerns its ubiquity—he may as well not try to raise a stock of birds at all. If one cannot arrange for ditches of clear running water, then the best substitute is a large number of properly constructed catchpools, numerous enough, and so formed as to ensure a constant supply.

The great secret of keeping a head of game and increasing it, is to encourage the birds to remain where they are. You may breed a thousand pheasants annually, and turn them down, but if your coverts do not encourage the birds, there will be no greater head at the end of six years than at starting. Encouragement consists more in careful feeding and attention in winter than anything else. A few artichokes, raisins, and similar dainties given once a week, your birds remain. In the absence of dainties, your economical neighbour, with his one keeper, who knows how to encourage birds well, gets all the benefit of your expenditure, and blazes away on the long looked-for First, while you and your friends look aghast and anathematise.

Ants' Eggs.—Young pheasants ought to get some ants' eggs, if possible; they help them along, and seem much appreciated. If ants' eggs are not obtainable, a substitute must be found. It is not advisable to give the live ants, only their eggs; moreover, the latter will keep any length of time. The difficulty is to separate the eggs from the ants and other matter. The best process is in the first place to expose both ants and eggs to the sun, and provide a few branches of green leaves, as the only shelter near. Place the branches on a board or cloth. The ants will then carry their eggs beneath the shelter afforded, but do not let them get under the flat surface provided. In a little while the ants will for the most part get on to the twigs and leaves of the branches, which should then be removed, and a piece of blanket or similar material drawn over the remainder, and shaken until nothing but the eggs remain. The best substitutes are Spratts Patent "Crissel," and bruised wheat soaked in chamber lye for two or three days, and then treated to a kind of frying in a *dry* tin. It is then ready to be given in small quantities among the other food. These things are almost necessaries in young pheasants' food.

Catching up Birds.—It is very often necessary to catch up pheasants alive and uninjured. There are several ways of doing this in a wholesale manner, which are best not mentioned. But they can be taken at the feeding places by what is termed "hingling," or fixing up a number of rabbit snares, with the loop arranged to draw only sufficiently tight to hold the bird without choking it. They can also be caught in the kind of bird-trap delineated in Fig. 10, which

we have found the most effectual and least troublesome mode of taking them. The best way to use the traps is to set a few in a well-frequented feeding place overnight, and in the morning the pheasants will be found in them. It is, of course, necessary to keep a sharp look out that the birds, when caught, are not injured by vermin, or otherwise. Full directions for setting these traps, which are chiefly intended for hawks, &c., will be found in the chapter treating of these

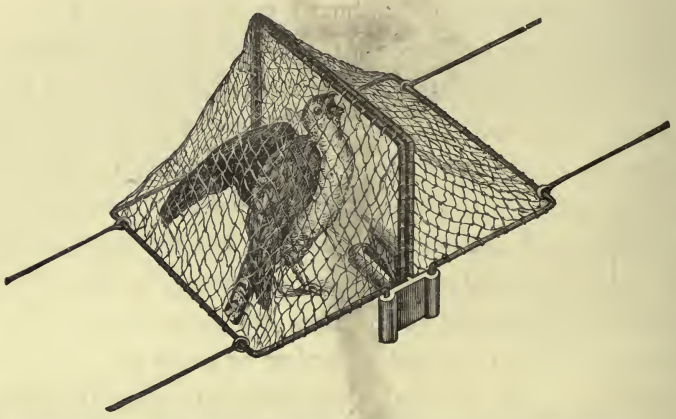


FIG. 10.—"THE GAMEKEEPER'S FRIEND" (SANKEY'S PATENT).

birds. They can also be caught at night by means of a round net at the end of a fairly long pole. The net is simply placed over any birds seen roosting within reach. The procedure entails careful and patient manipulation.

Eggs.—The collecting, carrying, and keeping of eggs are all-important matters, upon the proper performance of which may depend the whole season's stock of young birds. The best mode of collecting eggs from nests about the estate

is to carry a box and a bag full of bran or chaff. When a nest is found, place about 1in. depth of bran in the box, and set the eggs up on their small ends, filling up with bran, sufficient to prevent their moving. If it be necessary to send to, or receive eggs from, a distance, there is no packing so suitable as cotton-wool and bran. Each egg is wrapped up separately in just sufficient wool to cover it, and set on a layer of bran in a wooden box, the interstices are then filled up between the eggs with more bran, and finally covered with a layer of the same material, the operation being repeated till the box is full. When putting on the lid, make sure that you have as much bran as the box will hold, so that if shaken much it will not leave an empty space at the top; and so prevent the eggs from breaking. It would not be unadvisable to finish the packing with a layer of cotton-wool. When eggs have to be kept any length of time for sitting purposes, it is necessary that they should be moved every day. The best way is to make some shallow wooden trays about 3in. deep, upon the bottom of which 1in. in depth of bran or chaff or any other similar material is provided. When first obtained the eggs are placed regularly in this, stuck upon their small ends, and their position daily reversed. Of course, the fresher the eggs when set the better, but it is oft-times obligatory to keep them some days, and in that event the mode of storing described is the best and surest.

Hens for Sitting.—Much difference of opinion exists as to which fowls are the best for setting pheasants' eggs under. Some prefer one breed, some another. Of those recommended probably the worst are bantams. We may

be prejudiced, but we would sooner have the old mongrel farmyard hen than any other. They sit tighter, they are quiet, and not easily alarmed, and for care and anxiety for the welfare of the chicks, they are unequalled. Silky fowls are also recommended as well as turkeys; we have not had any personal experience with the latter, but those who have for the most part sing very faintly of their merits for pheasant hatching and rearing. Of the machine hens, otherwise incubators, there is little to be said. Those who have the time and patience which they require can hatch out eggs fast and successfully enough, but for the game-keeper of ordinary character, they would hardly prove a very good way of hatching.

Proportion of Cock and Hen Birds.—The question often arises as to what is the most advantageous proportion in which to leave the birds at the end of the season, and how to determine the relative number of male and female birds to be left in the coverts. Most preservers, who take a practical interest in their pheasants, seem agreed that invariably too many cocks, or—to put it the other way about—too few hens are killed during the season, and the result is a bad hatching time, as far as results are concerned, when the spring comes round. We hold the same opinion, and think the matter deserves enquiry, more particularly on preserves where a large head of pheasants is kept up. To guard against an overplus of birds one way or other, the best mode of procedure is to decide, about the first week in December, not earlier, upon a certain covert as the one in which to endeavour to keep the breeding stock for next year, until the end of the season. By careful

feeding and coaxing it will be possible to collect to this one particular place all the birds necessary in the proportion of one cock to three or four hens, not more. All the rest of the preserve can then be killed down as close as may be; but some one covert—or coverts if the estate be large—must not be disturbed. The birds will quickly notice this fact, and resort to its quiet and safe limits.

Transporting.—On this subject there is little to say, as the sending of live wild birds is so expeditious and easy a matter nowadays, that anyone can put up pheasants safely enough to travel. The only instructions necessary are, to recommend each bird being separate, and provided with only sufficient head room to stand up straight on its legs. If more be provided, the bird would be very likely to hop and endeavour to fly upwards, and inflict serious damage to its skull, perhaps kill itself.

CHAPTER IX.—PARTRIDGES.

Natural History.

WE have in the British Isles two varieties of the perdix, that known to sportsmen as the English partridge—the original "nut-brown bird,"—and the French partridge or redleg. The former is immeasurably the superior game bird of the two, and has many claims to admiration, for, besides being indigenous, it is naturally far more plentiful in our much maligned islands than in any other country. The partridge, moreover, satisfies a want which would be sorely felt had we no such bird to help us through. In the case of grouse, pheasants, and all the rest of the category, the more the land is looked after, and the higher the cultivation, the less congenial is it to the habits and tastes of these game birds. But the partridge's *beau-idéal* of a home is an essentially English spot in the landscape. A bright warm wheat stubble, a pasture growing such grasses as form its best-liked cover, with a little expanse of broken ground, overgrown with brake, hard by, and you have just the locality a partridge loves to haunt. In character, it is a quiet easy-going bird, and one that is little concerned

when bustled about, provided always that the bustling be not overdone.

It is no difficult task to specify the localities suitable to partridge preserving; it would be far less easy to name any portion of our country where one might not find it possible to raise a covey of birds. If it be given a fair chance and afforded some inducement to establish itself, the partridge is quite capable of doing so. It needs little help, and is far less dependent on the protection of man than the pheasant or the grouse. Any locality where there is a fair sprinkling of arable land, and where the ground is not, although wholly pasture, of a partially uneven and broken character, will serve—a low bit of brake here, and a few rods of common there, alternating with close cropped hedges to form the divisions. But where it is painfully evident that the land is used for grazing purposes only, by its stiff walled hedgerows and monotony of meadows, then the partridge coveys will be few and very far between. Upon the high bleak moors, too, it finds a habitat agreeable to its taste, and in Wales, Scotland, and even the wild islands on its northernmost coast. On the dreary, inhospitable waste of Dartmoor we have found them, thriving, yet solitary, far from the cultivated fields on its outskirts. Thus, it lends itself under all favourable conditions to the desires of the game preserver, and very little expense or trouble is needed upon his part to ensure a copious supply of these much esteemed game birds.

The habits of the partridge are very interesting. In the early spring it frequents the fallows and the pasture fields, rarely quitting them, except for the low copse or spinney

to sun and dust itself, or for shelter in severe weather. In the first week of February the mating season commences, and by the middle of the month pairing is in full swing. Then the males have their little differences, ending often in battles royal, and as they are very plucky, and as, it is believed, there are always a majority of male birds, it may be supposed that the contests are sometimes severe, insomuch that many have to retire to a solitary life, consequent on their inability to win mates. Of course, in the rougher, less protected parts, the mating season is later, and even in the less exposed districts, the occurrence of bad cold weather in March will often cause the partridges already paired to reunite in the coveys of which they previously formed part.

Partridges, unlike pheasants, are strictly monogamous, the hen forming the nest and incubating under close attention by the male. The nest making is a by no means lengthy nor elaborate proceeding, the chief cause of anxiety seeming to be the choice of site, and they will often search for weeks before selecting one possessing all the necessary qualifications. The nest itself is a very simple affair, and consists of a plain hollow scratched and formed under some shelter. It is adorned with a certain amount of lining, which may consist of dead leaves and grass, bits of fern and straw or the like. The site chosen varies considerably, but always exhibits certain characteristics. When situated in grass, clover, or corn fields, it is invariably beneath some specially thick tuft of growth, and at a spot slightly elevated above the surrounding parts. It may be at the foot of a tree, or bush, or post, in the rough weedy growth

in the angles of the field, or beneath the hedgerow. Sometimes in a spinney, or the broken ground and low covert beside a field, or just within a plantation, or on a moor, if so, not far from a damp place or mire. Sometimes, also, very eccentric spots are chosen. The eggs vary from eight to twenty in number, but we find the average to be about fourteen. Incubation requires about three weeks, during which time the male keeps vigilant watch, but never assists in the sitting, although doing the most he can to protect it.

As soon as the young are hatched, or within a few hours, they are ready to move out. This will be from the middle of June to the commencement of July, but the hatching time with partridges varies so very much, consequent on the nature of the season, locality, &c., that it is difficult to lay down a hard and fast line as to the time. Immediately the young move out, the old male bird commences to take his share in the protection and feeding of the youngsters. The partridge is naturally a hardy bird, and the percentage of birds reared to eggs must be large. It only suffers from wet weather, such as we have of late years acquired far to great a familiarity with. In the last decade the stock of partridges must have decreased to a very large extent, and it behoves all preservers to lend a helping hand to get it up again to a proper footing. The partridge and its young roost on the ground in similar spots to those where they nest. The young repose beneath both the paternal and maternal wing until too large, when they pass the night in a bunch, heads pointing outwards.

The birds begin to move early in the morning, when

the sun rises, and start to feed. Their food is multifarious, varying according to the season. During spring and early summer, blades of grass, &c.; all sorts of seeds, chiefly of the various kinds of plants, coming under the denomination of weeds. In addition to this form of food, the bird subsists to a very great extent on all sorts of insects in their many forms of existence, preferring, however, ants, wireworms, spiders, slugs, and members of the aphis family, of which the well-known cuckoo-spit is at once the most common and most mischievous. The young birds until fully matured devour nothing but insect food. In late summer and autumn a very small portion of corn is also eaten by the partridge, but we believe it never pulls an ear of corn down which is not within its reach, so that during the time our cereal crops are ripening, the partridge, although a constant frequenter of the fields, does no damage to the grain. Its express aim in being there is to feed upon the thousands of insects always present and upon the seeds of the many weeds now ripening; but, of course, if there be any ears of grain within reach it soon empties them of their fruit. It is after the corn is cut, however, that the partridge consumes most grain, for it lies, some in the fallen ears and some on the ground, the food for any bird that likes to consume it, and we are sure the farmer could not grudge the ever beneficial little brown birds the share they earn so well.

As soon as feeding is completed the birds repair to some particular place to pass the day. In winter this is generally some grass field or low brake where they find good shelter and warmth, but it often occurs that food is so scarce or

so difficult to obtain, that they may pass the whole day before finding sufficient to make a meal. During the remainder of the year and according to the particular part of the season, clover, potato or turnip fields, short gorse, or broom covers or the edge of the moor if it be near, and last but not least the stubbles, are all acceptable as mid-day retreats. Towards evening they again go on the feed, and generally make their "squat" for the night about sun down, when they "jug" or "juck," the technical word for the cry they make at this time. The brood and the old birds remain always together until the next mating time, when the covey breaks up and the pairing begins. Sometimes two or more coveys will join together and so remain in peaceful unison, and at the end of the season they sometimes "pack" like grouse, forming into, comparatively speaking, large flocks.

Hen partridges, probably more than any other birds, are in the habit of using one nest for two birds, and the progeny are divided into two broods, which however work usually together.

This bird is extremely neat and careful in its habits and attentive to its appearance. A considerable time each day is devoted to dusting and cleaning of the feathers. The site chosen is generally a sunny bank, but often a road. If the former it is used for some time, and the spots to which the birds resort for this purpose are easily distinguished by the foot-marks, termed "roads," on the fine dust produced.

The partridge has several cries which are easily caught by the practised ear and known to denote certain pro-

ceedings by those possessed of sufficient acumen to discover them. The call and answer of the birds at mating time, and the evening "picking" of the coveys should be well enough known. It may be as well to mention that "coveys" are "sprung" when put up and a "brace" killed; sometimes a brace and a half are called a "leash," but only by old-fashioned sportsmen.

Of the Red-legged, French or Guernsey partridge there is but little to say. The divergence between its habits and those of the common partridge are few. In the choice of locality they prefer rough hilly parts, interspersed with cultivated ground, and short uneven copse-wood. They will perch on gate rails, trees and hedgerows, and from a sporting point of view, are far inferior to the ordinary perdix, as they invariably refuse to rise; their extremely well developed powers of running render them almost unapproachable by ordinary pointers, and there is nothing which will put them up like a quick blustering spaniel; so that, far from being an acquisition to our preserves, they are a disadvantage. Besides, as a table article they are far inferior. It has been noticed, and confirmed by the observations of all sorts and conditions of men interested in game preserving, that where the red-leg establishes itself the ordinary partridge will in time die out; consequently it has become the custom to endeavour to exterminate the foreigner, but with indifferent success, as besides being so difficult to shoot, it seems very pertinacious of its footing here, and seems resolutely to remain, caught birds and destroyed nests notwithstanding. In its other habits it does not differ materially from the common partridge, except that it packs considerably and

for some weeks at a time. The eggs differ from the ordinary species, resembling in their colouring more those of black game than any other game birds. They are incapable of being domesticated to any extent and will not breed except in a wild state. They generally run rather larger birds than the English ones.

CHAPTER X.—PARTRIDGES.

Introduction, Breeding and Rearing.

THE partridge is so ubiquitous that it would be difficult to find any large expanse of the country where it is not present. Consequently the introduction of these game birds on lands where they have hitherto not been preserved, nor were present, is an operation seldom required to be carried out. The first matter for consideration is, naturally, the aspect of the country, and, unless that be suitable it will be found impossible to introduce partridges. As a rule, exceptions to which do not often occur, it may be said that where partridges already are, they can be increased, and an occasional covey or two in a given locality may always be taken as a proof that it is a suitable one whereon to attempt their introduction. This can but consist in turning away a number of couples of birds in the spring at mating time, say the month of March, or even April, provided the birds have not already paired, which are turned down. Partridges can be obtained anywhere and at a reasonable figure, and the only point in the choosing which requires observing is to obtain birds from localities possessing similar, but

not necessarily identical features with the district in which it is purposed to introduce them. When turning the birds down the best plan is to place two or three pairs within a short distance of one another, so that the usual calling for mates and jealousies of the males over their chosen hens may be duly gone through. The best spot to put down partridges in spring is in a dry rough pasture, more particularly if there be a small expanse of low uneven brake adjacent. Put them down towards night time, as they will then have no disposition to fly off, and after a night's rest will probably settle down and stick to the near neighbourhood of their first resting place. For the first day or two a little grain—oats, barley or wheat—scattered about may help them along, but it should be given in but small quantities, and for but one or two days.

The introduction of partridges may furthermore be made by buying, or acquiring, eggs and hatching them out under hens. From a pecuniary point of view this is the most satisfactory mode, while the successful rearing of some few dozen of young birds would provide a nucleus of a future large stock. It is, however, a process involving a considerable amount of trouble, and as partridges are often the sole "little bit of fleck or feather" a farmer cares to have, he does not often incline to devote much trouble to them, and would prefer to put down his few pounds and turn away a dozen pairs of one-year-old birds. The regular preserver, on the other hand, has his keepers and can breed them easily enough, and rear them with ordinary attention. Some keepers seem to consider the hand-rearing of partridges rather beneath them, and fight shy of anything short of pheasants.

Of course, partridge rearing is never so extensive a business as the production of a stock of pheasants. If you rear a dozen of the latter, and turn them out on a farm or estate of 100 acres or so, by the end of twelve months they will probably have reached the commanding total of six; but if, on the other hand, you put away a pair or two of the "nut-browns," they will make a twelve-monthly increase of three or four times their number, so that a stock of partridges being once established, very little addition to their numbers is necessary. For the same reason, the arrangements for the hand-rearing of partridges never require to be on the same scale as those for the more aristocratic game bird. Hand-rearing partridges may be undertaken by the large preserver or the farmer of a fifty acre holding. In the former case, we have all our appliances for the annual pheasant breeding on hand, and can utilise them accordingly. The first step is, of course, the acquisition of eggs. These can be bought from a recognised reliable source, arranged for with the neighbouring preservers—not their keepers, be it remarked—or taken from the nests on the place. We are speaking now of large shootings. Like the pheasant, the partridge invariably hatches from 25 to 50 per cent. more birds out than it rears. The remainder die off from various causes, rarely purely natural ones. Consequently, if at nesting time we search out our partridge nests, and relieve them of the superabundant eggs, they stand a much better chance of producing full-grown partridges eventually, and the hen bird can expend all her maternal energies on the less numerous progeny. At nesting time a thorough keeper and an

observant farmer always know where the nids are. We have also noticed that a good many others know these things pretty well, too. Consequently, a daily round to collect from all *unset* nests the eggs in excess of ten or fifteen, according to the season, will be an easy matter, and result in providing a good store of eggs for setting under hens. The best hens are certainly not bantams, but the same type as hatch out the pheasant eggs. From fifteen to nineteen eggs may be put under one hen, and we think the medium, seventeen, the best number. The hens are best set in a hatching house, if there is room; if not, in any spot which offers some of the advantages of one. The treatment up to hatching time is the same as with pheasants, but the subsequent course of operations varies somewhat. It is highly important that the eggs should be thoroughly aired every day, and we are inclined to think a sprinkling of tepid water on the eighteenth and following days of incubation proves worth the trouble entailed. We doubt if they would stand artificial incubation; the chicks would certainly die in the shell in considerable numbers. It is a very common practice to utilise chicks, hatched out under fowls, for making up field-reared broods, which are small in numbers, to the limits of a large covey; but this is a very poor way of working off hand-bred birds, for the reasons already mentioned.

As soon as hatched the young partridges are placed in the rearing coops, and treated in the same way as pheasants, with the exception that their food must partake of an insectile form more largely. For the first few days they should receive only the eggs of the small ant, but if this be really unobtainable, a substitute may be found in the

prepared bread recommended in Chapter VIII.; or in Spratts "Crissel." About the third or fourth day some custard may be given, mixed with lettuce, chickweed, plantain (the unripe flower), groundsel, rice broken small and boiled, and small quantities of any small bird seeds. The best way is to make a thinnish custard, and mix some of the other food materials with it, always giving preponderance to the green food. Any insects which may be obtainable may also be given in addition to the ants' eggs, which, it is necessary to remark, ought not to be offered the chicks till the other food has satisfied their appetites. Small snails, and the eggs of snails, any species of live ants, maggots in a chrysalis state only, spiders, and many other similar kinds of insects may be given if they can be obtained, but it must not be imagined that all these are a *sine qua non* of partridge rearing. The food of young partridges should be varied as much as possible day by day, but if they always have a few insects and plenty of green stuff, the choice of food to be daily given may be left to the preserver. In addition to the articles of diet already mentioned, the following may also find a place in the rations: hard-boiled eggs chopped up small and given within an hour or so of being boiled, crumbs of bread, oatmeal made up into a dry paste with water or "liquor" from boiled meat, an occasional few broken peppercorns, chopped onion, spinach, or half-formed pods of peas. It is a mistake to place young partridges on a grain diet too soon. In a natural state they scarcely touch any at all until several months old, and it certainly cannot be beneficial to force them to the consumption of wheat, barley, or oats before they have the desire.

An important part of the hand-rearing of partridges is that the coops and runs confining the chicks be moved daily on to fresh untainted ground. With pheasants this is advisable, with partridges a necessity, for it must be confessed that although somewhat less liable than the former game birds to the many little ills which attack coop-reared youngsters, they have not the hardihood, or, rather, do not lend themselves so easily to an artificial life, and are consequently less easily reared. Gapes, roup, catarrh, and cramp are the maladies most affecting them, and the first, when once acquired, generally proves virulent and difficult to stamp out. The means of prevention, and the steps necessary to be taken to effect a cure, are the same as with pheasants, as is, indeed, every portion of the process of hand-rearing not entered into here. The business is so similar that it would be superfluous to enter into a separate explanation for each.

As soon as the young partridges are half grown, which is determined by a full development of the feathers, and a general sturdiness of body, the coops must be removed with their broods of hens and chicks to the edge of a cornfield, and placed in a dry spot just within the wheat or oats—which we prefer—and the young birds be given their liberty, the hens alone being confined. For a few days the partridges will remain about the coop, and perhaps nestle beneath their foster mother's sheltering feathers, but probably before a week is out they will have thrown off all trammels of domestication and dependence, and struck out a course of life on their own account, when they may be immediately left to take their chance. Young partridges should only be turned

out in fields which are reasonably secure both from poachers and vermin, for both the human and animal depredators have every opportunity of molesting and destroying them. There is no doubt that, looking at matters from this point of view, oat fields are the most suitable rearing grounds for the young birds, as they offer far more cover and security from winged vermin, and more opposition to the progress of ground vermin than wheat fields. The same may be said of barley, but we prefer wheat or oats. Another consideration is not to put the broods down sufficiently near enough to run into one another, otherwise they will pack to some extent, and very large covies will be the undesirable result. One brood to every four acres is a sufficiently thick stock ; if they are reared up more numerously than this, serious consequences may result. We allude to the outbreak of disease in an epidemic form, which will soon carry off the stock.

Once turned away, young partridges require no more looking after beyond the usual attention from the keeper, but he ought to watch, without necessarily disturbing, each brood turned down, until they become too large. Stealing birds, pure and simple, is so much practised nowadays by farm labourers, that it becomes yearly more necessary to watch for and counteract their nefarious designs. While the meadows and hayfields are being mowed, whether by machine or scythe, the keeper, or someone that can be reliably trusted, should be present, attendant either on the mowers or following the machine, with a view to the discovery and acquisition of any hard-set nests. He should further arrange for two or three broody hens to be available

about this time, so that the sittings which the partridge would otherwise neglect may be quickly brought in and placed under the fowls for further incubation. By carrying this practice out systematically, a large number of nests will, in general, be saved, and particularly on extensive partridge shootings; the eggs will be hatched off, and even if only 50 per cent. of these be brought in, they will result in full grown birds eventually, and the small amount of trouble will be repaid.

A large number of partridges die during each winter from exposure and disease, but very few from hunger, for be the weather never so severe, they still manage to pick up enough to keep body and soul together. But when a long spell of wet, frost, or snow comes, food proves scarce for several days in succession, and the poor little birds are at their wits' end for a sufficiency of nourishment and warmth, particularly the former, and their condition may sometimes become so low that death must supervene. It, therefore, behoves every true sportsman to do something towards averting such a possible result, by providing food for the game birds he has brought together on his estate. We consider it the bounden duty of every preserver to provide food for partridges in times when the earth is bound up with frost and snow. He or his keeper know well enough where the partridges lie, and the mere scattering of some grain, wheat, barley, or oats along the sheltered hedgerows during severe weather entails but a trifling expenditure, and is sure to do good. We once followed the track on the snow of three partridges round a 12-acre and 10-acre field, and for a long distance in another, and on no portion of their

wanderings was a particle of food within reach, owing to the depth of snow and the hedgerows being solely stone walls. It struck us then what a wearisome hunt the birds must have had before obtaining any breakfast that day. If they went the same course next day, they had not far to go on an empty stomach. In the matter of shelter but little can be done, as, except under the most peculiar circumstances, partridges should always be able to find shelter. Faggots of brush wood set up in "stook" fashion provide the most suitable protection for these birds.

Disease sometimes makes its appearance among the partridges, particularly in wet seasons, when they suffer considerably. Tapeworm will affect them, and kill off a small percentage, and the presence of these animals within the body quickly reduces the birds to very poor condition, so much so as to render them unfit for table purposes. Whence tapeworm is acquired by partridges we cannot tell, but no doubt some of our learned scientists are familiar with its life history. The information obtainable from them as to its prevention would probably be either impracticable or ridiculous. Moreover, individual birds are first found to be suffering from the malady when either shot or discovered lying dead in the fields.

Another disease which, seemingly, *hand-reared* partridges alone suffer from is roup. It is evidently a different form of that malady from the one which occasionally decimates the broods of young pheasants, as young partridges still under coop rarely suffer from, and scarcely ever die in consequence. While, on the other hand, fully matured birds acquire it, and ofttimes die off by dozens. The most

noteworthy symptom is the presence of large swellings on each side of the head, sufficiently prominent to be noticeable during the flight of a covey on individual members of it. Wet seasons, of course, serve to account for it. The naturally reared birds escape its ravages, simply because they are wild birds, whereas, on the other hand, those reared under a barn-door fowl and in a coop do not possess the natural strength of constitution and peculiarity of habit which enable their less pampered congeners either to escape the malady or withstand its attack.

Another cause of loss among the ranks of the "nut-browns" is one which must call up a sympathetic feeling in the breasts of sportsmen, namely, the formation of clay balls upon the feet of young partridges present upon lands of a clayey nature. In damp weather the soil clogs on the little birds' feet, often to such an extent as to render movement impossible, when they must needs lag behind the brood, drop down and die of exhaustion or starvation, or from both combined. Nothing can be done for it beyond watching the covies closely, and driving them some little distance carefully, any encumbered chicks will soon be noticed, when they can often be caught and relieved.

Apart from these, the only other causes of numerical diminution in partridges are such as will be treated of in the following chapter, with the exception of one, which may be regarded as a curious fact of natural history. The natural proportion of the sexes to one another in partridges is 65 females to 75 males. The partridge, furthermore, being a strictly monogamous bird, it naturally follows that not only would many of the males be unprovided with mates, but

that paired birds would be considerably hampered from carrying out their nidification in a successful manner. The result would eventually be — were things allowed to take their course—that all wild bred partridges would die out, at least we may take it that such would be the case, as, from observations made, it has been conclusively proved that the above-mentioned numerical superiority of males exists in the average of broods hatched, and that wherever partridges have been left unmolested, when present in some numbers, they showed at the end of only two years a vast diminution. It is, therefore, necessary that every preserver see that his cock partridges—particularly the old ones—are well killed down. The latter from their head-strong habits are easily marked out from the rest, and an intelligent keeper would find no difficulty in providing a remedy for the superabundance of male birds between the 1st September and the 1st of February.

Another matter is the extermination of red-legs, that is the doing away with the French partridge, which, whatever be its claims otherwise than from a sporting point of view, has come to be regarded as an unmitigated nuisance by all who take an interest in partridges on account of the sport they afford. The red-leg, except during downright cold weather, or the first week in September, is almost "unget-atable," and spoils sport with the other sort to a very great degree. Gastronomically speaking, they are worth no more than a pigeon, while the way in which they thrive them-selves and steadfastly endeavour to preclude their less gaudy brethren from doing so, is no qualification for them as a British game bird. Under these circumstances, the best

thing to be done is to clear them off at once, for we certainly do not want them. We do not mind the Frenchman's dogs in moderation; and we countenance Belgian barrels, but the line must be drawn somewhere, and the preservation of red-legs seems a good place for the boundary.

CHAPTER XI.—PARTRIDGES.

Protection.

THE protection of partridges is a very different business from that of protecting pheasants, the various items of which have had due attention and consideration given them. Pheasant preserving is an expensive and complicated matter up to a certain point. It consists in the main of rearing as many birds as possible and turning them away. It is, in fact, a species of stock raising, only the stock consists of game birds. Partridge preserving, on the other hand, is just what its name implies for the most part, and the protection afforded the birds is the mainstay of their powers of increase. Unless one protects his partridges they die off. You may buy eggs, rear them into birds, and turn them away, but unless you afford some sheltering and care-giving aid, the birds will not increase, nor even maintain their numbers, but will slowly decrease to a mere scattering of covies, very few and very far between.

Besides this, partridge preserving is dependent upon so many side issues for successful results. Any landed proprietor, who has suitable coverts, can rear pheasants and

preserve them, but partridges require far different conditions for existence, which are alone found in the cultivated fields of the farmer, whose ideas of what is right and just very often differ from those of the landlord, or the proprietor of the shooting. The result of this divergence of opinion respecting game-preserving may prove most unpleasant. We have seen it in the case of the Ground Game Act, which has injured those for whose benefit it was enacted far more than those at whose heads it was levelled, and for aught we know, we may see it again in the case of partridges, and it is in no captious spirit that we warn preservers how they go to work with that class of farmers who can only see with one eye, and that but a poor sort of optic. Of course, there are more farmers who support game preserving than find it a grievance, and who are first to look after the partridges' weal, but politics nowadays have arrived at such a pass, that there are men who imagine that by placing their foot on a nestful of olive-brown eggs, they strike a blow in the cause of tenant-right. It is against this sort of thing that game preservers have to combat, besides the poacher and the varmints, and what we counsel is, tact in dealing with such men. If the man who owns or rents a shooting over the land of farmers who take the unkind view of things attempts to deal in any harsh or over-bearing manner with this kind of poaching, for such it is, he will have poor sport for his pains, and do more to aggravate that distrust between class and class which has sprung up of late years and which it is our imperative duty to try to do away with.

We have spoken on this matter now, because it is in the

preserving of partridges that it comes most to the fore, and because good sport in the month of September can only be expected when good feeling prevails between the cultivator of the soil and the preserver of the game.

The partridge suffers more from attacks by vermin than any other of our game birds. It is the least difficult for winged and furred marauders to obtain, and it possesses less means of defending itself against their rapacity. From the eggs to the full grown bird, every varmint that runs or flies is on the look out for them. The polecat kills the hen bird on her nest, and the broods of young, the stoat carries on the same practice, while both of these varmints may kill a covey in the night; weasels are for ever on the look out for the eggs, and cats have a nasty knack of killing the females whilst sitting. Foxes, also, know all about it.

Of the feathered marauders we need say little, but it is to the point. They are all equally bad—hawks, crows, magpies, and jays. Even the common snake cannot resist them; well behaved as this lengthy gentleman generally is, partridges prove too strong an allurement for him and he falls away from the path of virtue. The cure for all this we know; "to kill vermin is to preserve game," and if we want partridges we cannot have stoats, weasels, hawks, and jays *et hoc genus omne.*

The next cause of diminution in partridges is poaching; but, as the preserving of the perdix differs from that of the pheasant, so the style of poaching them differs. Poachers rarely shoot partridges except they belong to that class of men who poach for pleasure and sport alone; they are of the same nature as the men who travel on the railway with-

out a ticket, and who go to gate-money races without paying. You may fine them, and give them a month on the treadmill; it has no effect. At the first chance they are at it again, and we can only appreciate the persistence which prompts them. The partridge poacher who works for the money it brings in does not care for shooting. Netting and snaring are more to his taste, and a remarkably good hand he is at the business as a rule. Crafty to a degree, he generally makes the game pay—literally. His netting is mostly a night performance, snaring a day one; he knows where every covey "jucks" and can act accordingly. Leaving his house about midnight, he meets a companion; their apparatus a dog and a net, the former a sheep dog of dilapidated aspect, which points in a manner that would astound the field trial judges; the latter probably an old salmon net, possibly one made on purpose. The field reached, the dog is put on to range, a handkerchief or a piece of white cloth round his neck. The men know about where the birds are and act promptly, and in a few minutes have secured a whole covey—enough for one night, one would think. Not a bit of it; off again! and so on, till perhaps they have as many birds as they can carry home. Then, again, they pull a long net across the fields, and catch the birds in this manner. Any field serves, from a fallow to a wheat field in full ear.

To prevent this mode of netting, all fields where there are partridges must be "bushed." Bushing consists of fixing any kind of obstacles in the ground by which the net may be torn, caught or entangled. Bushes may consist of any kind of thorny shrub, branches of black and white thorn,

and thick brambles, the latter fixed thin end downwards; plain stakes provided with one or two projecting nails may also serve for bushing, or if placed at an angle, without nails. Gamekeepers should know where their partridges nest, and bush accordingly. The proper way to do this is to place the bushes, fixing them, some firmly, some loosely, about fifty yards apart each way, so that the bushes of one line come opposite the intervals in the other. Netting partridges only pays the poacher in the early part of the season, and extra vigilance is therefore necessary during the two or three weeks or so subsequent to the 1st September. It is, however, during the week previous that the largest depredations are carried on, and early in the morning on the "First," when shooting will go on, unless one is on the look out to prevent it.

Snaring is chiefly indulged in by labourers and ne'er-do-wells. The dusting and nesting places are the most suitable and most favoured spots, and the business often proves very successful. Only systematic vigilance and observation on the part of the keepers can prevent it, and on that alone can one rely. It is a simple, but very effective style of poaching and very much worked, so that no man should flatter himself that his birds are not being snared. Boys can do it, as well as men, and an eye should therefore be kept on everybody.

Egg stealing is another style of poaching; it is not practised to the same extent as with pheasants, but is carried on by the same class of people—labourers, their children, and their wives. Its prevention is simple; never purchase any partridge eggs except from recognised sources; do not allow people to gather "wild-flowers"

during the nest season of partridges, and summon some one who is trespassing if you can get the chance. Taking it for granted that the keeper knows all the nests, if one goes put on a watch to catch the thief of any others. Vermin leave the shells.

Egg destroying is also prevalent, and to our thinking is the meanest trick one man can play on another. Labourers who ask for a rise of wages and do not obtain it, or those who have been discharged for idleness, or bad behaviour; people who have been warned about trespassing; farmers who consider bad seasons and low prices are caused by their landlords or due to game preserving; these are the sort of poachers who step on a partridge's nest or kick a brood of young ones to death. They are poachers and of the most despicable sort. We would sooner have our pheasants decimated by a barefaced gang than suffer a man to deliberately tread out a nest of eggs.

The necessary protection of partridges from the various modes of destruction so far detailed is obvious enough. The gamekeeper's duty, pure and simple, must be the preventive, and the remedy more certain vigilance for the future. Partridges must in addition, however, be saved from themselves, as we have already stated. The majority of male birds must be done away with if we wish our stock to increase, and not remain at a certain quantity year after year. To kill the cocks down the most satisfactory way is to shoot them in the pairing season, but this is against the law. It is, however, a case of "make money honestly if you can, but—make money."

There are amongst partridges what are termed "bachelors"

—that is, we should judge, but cannot state authoritatively, cocks which have fought for a mate and received a "licking." Anyhow, they do not attempt to pair, but four, five, or six of them will club together, and prevent other birds from bringing their breeding preparations to any material result. These bachelors should always be destroyed, as well as what are technically termed "hen cocks"—that is, birds which suffer, as hen pheasants do also, from a disease of the ovary, which precludes their breeding, when they assume the colouring of cock birds, and act in the manner of "bachelors." These must also be killed off, for they worry the nesting hens to such an extent that the latter are often unable to deposit two eggs on the same spot. Everyone has found single partridge eggs lying about in any and odd places. This is the result of the presence of "bachelors" and "hen cocks" on the preserves.

During the nesting season it should be one of the most important duties of the keeper to "beat" the clovers and meadow grass with a view to the discovery and marking of all partridge nests situated within them, so that when the fields are being mown for hay a yard or two square may be left round each nest not brought off. To beat clovers, two men and a boy are necessary. The men stretch a line about one hundred yards in length, and draw it gently and evenly along the top of the verdure, the boy walking a few yards behind carrying a bundle of sticks, each one having some distinctive mark fixed to one end. Whenever a nest is found it is marked by placing a stick not near it, but at a certain distance off in a certain direction, these being the same at each nest in every field, or varied from field to field.

Thus in the old pastures the mark might be placed fifteen yards to the right of each nest, in the clovers an equal distance to the left. Before the field is mown the keeper can, of course, mark out each nest distinctly; meanwhile, the sticks prove no guide to egg-stealers, &c.

The proper time for bushing fields must depend upon the crops growing in them. In barley fields the bushing must be done as soon as the crop has been rolled, oats the same, wheat immediately when sown. For these, brambles are the best to employ, because when cut green and stuck in the earth either end first they continue to grow, and being of the same colour as the corn are almost unobservable. Turnips need only be bushed after they are hand-hoed for the last time; fallow land and stubbles, whenever birds lie or visit them.

Before closing this chapter we would repeat that the preservation of partridges differs very largely from that of other game, being dependent on the one hand on the ever watchful care of the gamekeeper over his birds and the destruction of vermin; and on the other, to the cordiality of relations between class and class which is so necessary and delightful a feature of rural life.

CHAPTER XII.—THE RED GROUSE.

Natural History.

TO the amateur game-preserver the natural history of the Red Grouse—or, to adopt the usual appellation, of *the* Grouse—is unimportant compared with that of the Pheasant, the Partridge, or even the Black Grouse, inasmuch as of all game birds *Tetrao Scoticus* has most right to be denominated wild. The whole system of grouse preservation nowadays is so much an art that a mere knowledge of the habits of the bird, such as may be imparted in the limits of the present work, can but serve as a starting point from which its life history may be gathered. What the pheasant does from day to day, the localities and natural features it prefers, the routine of the partridge's existence, and the kind of country it frequents, we can claim to teach; but to impart the knowledge of the grouse which a highland keeper acquires only by dint of lifelong experience, is what no one can claim to do. We can scarcely give more than the stereotyped form of natural history, though a trifle more correct, perhaps, than is gleaned from the pages of popular works. The grouse is indigenous

in all parts of the British Isles. In England it prevails to more or less extent on the moors of the four northern counties of Lancashire, Yorkshire, Derbyshire, sparsely in Staffordshire, and in appreciable extent in other counties. In the mountainous parts of Wales it is also a staple bird of sport, as also on most of the great Irish moorlands; but nowhere is it so abundant as in Scotland, particularly in the north or the highlands, and in the large islands generally on the western coast.

The reason of this abundance is not far to seek. The grouse is emphatically a denizen of the moor, and it is, moreover, a thoroughly *wild* bird, which, although amenable to domestication to some extent, brooks no intrusion either by man or beast, upon the uncultivated, unfrequented, almost desolate lands which are its sole habitat. Wherever the improving hand of man encroaches, the moorcock flies before him. It is not because the heather-covered lands of Aberdeenshire, of Sutherlandshire, and elsewhere, possess inherent peculiarities that they become acceptable to the grouse; it is because sheep, shepherds, and sheepdogs do not daily scour them, because the heather is not burned to make way for the growth of pasture, and because the many other conditions are not present which mark the progress of agriculture. Hence it is that we must journey to Yorkshire, to Cumberland, or to the Highlands before the 12th August, and learn, for the most part, the secret of successful grouse-preserving. The grouse seems to have little preference as regards the nature of a given moor, provided its haunts be sufficiently free from intrusion, and present the well-known characteristics of abundant heather and dry waste

land. It evidently prefers land of a medium description, between the barren stony wastes where ptarmigan may be sought for, and the marshy low tracks of moor, bog, and young plantations which seem to suit chiefly the tastes of black game. It must not be imagined, however, that grouse do not lend themselves to some extent to altered conditions of existence which may be forced upon them. On the contrary, the labours of game preservers in introducing hand-reared birds have certainly been successful in retaining grouse in the neighbourhood of cultivated ground, and despite the presence of flocks of sheep and their belongings on the moors. It is difficult to specify the peculiarities which cause one moor to be held in more favourable regard than others by the birds, but there is no doubt that such is the case. The chief desiderata, it may be assumed, are that the formation of the ground serves to some extent to shelter the slopes principally frequented from heavy inclemencies of weather; that any rain falling be quickly carried off, leaving a quick drying surface; that the cover be thick; that there be frequent inequalities of surface and a good supply of food besides that from the heather. Grouse have no particular spots which they frequent as roosting places, but will roost in one particular spot or close to it for several nights, sometimes for a week or so in succession. They are, however, very uncertain birds, and shift their quarters apparently without reason or aim.

Curiously, the red grouse is monogamous, so strictly, indeed, that we believe the instances of departure from this rule are curiosities of zoology. This strikes us as a singular characteristic, for both black game and the now rare capercailzie

are polygamous. The birds pair in the early spring, or rather at the end of winter, and by the end of February all the mating is over. By the end of April laying is in full progress. Sometimes birds will pair as early as the first week in December, but these premature matings are apparently ended on the first severity of weather. The nest is made in any slight hollow beneath or in the centre of a tuft of heather, where no water can, or rather should, accumulate. The furnishing of the nest is very slight—some bits of moss, or ling, and bents scraped together from near at hand. In this apology for a nest the eggs are deposited, varying from four to thirteen or fourteen, but the average we should judge to be near seven or eight. As soon as the young are hatched, the hen alone completing the incubation, they are taken care of by both parents, the hen assuming immediate charge, while the cock watches assiduously to protect his progeny from the attacks of vermin. The brood remains with the old bird until the autumn, when the family is broken up, and the birds pursue their respective courses, although remaining to some extent in consort till the "packing" of winter begins, when the broods become finally spread.

The daily routine of the red grouse's existence has features of its own. It is decidedly an early bird, and takes its first meal betimes in the morning, resorting subsequently to those spots where the day is passed in basking and "scrapping about," after which, in the afternoon, it seems to turn its attention to feeding again, and goes to roost early. In an undisturbed state we never find the grouse flying at dusk, much less afterwards, nor can we catch them napping among

their haunts at sunrise. Their food consists, for the most part, of some of the natural vegetable products of the waste lands which they frequent, and comprises chiefly the following: the tender portions of the ling or heath, commonly termed "heather;" of the heather proper (*Erica cinerea*), generally called "heath;" several kinds of sedge and other grasses, willows, and various descriptions of mountain berries, among which may be mentioned, as the most common, the whortleberry, the cranberry, the crowberry, and the red bearberry; also the shoots and leaves of these according to the season. To enumerate all the plants upon which grouse feed would be difficult. During winter they often become, like many other birds, very short of food, and when the supply is too scant on the weather-beaten moors, they have recourse to the fields and stubbles of farmers, and to outlying plantations. It has of late years become recognised as a necessity that grouse be fed with corn, &c., during severe weather, and seeing the numbers of birds which some moors have to support, we cannot but give the practice a hearty approval, both from a humane and practical point of view. But of this we shall have occasion to treat later on.

It will be seen that though a hill be wanting in heath or heather, it may still prove an attractive place for grouse to feed, owing to its producing other suitable food. This bird is one that alters its habits to a very inappreciable extent according to the season, and unlike its more sombre congener, will frequent precisely the same expanse of ground from one Midsummer day to another, unless ousted by sportsmen or other irresistible cause, and the mere shooting

of some members of a brood will not create any impulse to migration in the remainder.

Not much, perhaps, would be gained by going further into the natural history of this member of the Tetraonidæ. As was said before, a real insight into its mode of life and idiosyncrasies is only obtainable by personal observation in its moorland haunts.

CHAPTER XIII.—THE RED GROUSE.

Introduction and Maintenance of a Stock.

THE introduction of red grouse upon a moor is a very different matter to that of pheasants into existing coverts. The first obstacle to the establishment of a moor would probably be found in the acquisition of a suitable expanse of land. Nowadays deer forests, so called, are very much on a level with sheep farms, or, at least, it is sought to make them so, and the question is often debated, which would be the most successful, commercially considered. But, whether rightly or not, grouse moors are regarded as an expensive luxury, and as affording comparatively no recompense in rent to the owner of the land. Consequently, it is much easier to acquire a moor than to obtain an expanse of hill land, for the purpose of introducing and maintaining a head of moor game. It is a case of "first catch your hare." First acquire your moor not preserved, but ready and suitable to commence work on. A suitable moor must have two qualifications; firstly, and of chief importance, a natural adaptability of soil, situation and general character, for the rearing of grouse; and, secondly,

unlikelihood of being rendered practically useless by reason of its surroundings.

The soil of a grouse moor is the first matter for consideration, for unless that be suitable, it is useless seeking to maintain grouse upon it. Either it may be incapable of producing the variety or quantity of natural growth necessary, or it may drown out the birds in wet weather by reason of its holding instead of running off the rain. It is, doubtless, true that moorlands all bear much the same character in respect of soil, but it is also true that they vary more considerably than is generally imagined. It will often be noticed that, notwithstanding a very sheltered position, some portions, often of large extent, exhibit a sterility quite extraordinary, beside another occupying a most weather-beaten aspect. That this is due to the soil to some extent is certain, but more probably to the distance of the surface mould from the underlying rock. We have in our recollection one such spot in particular. One side of a hill exposed to all the roughest storms of wind, rain, and cold, is thickly clad with heather, ling, and berry plants; the other, occupying the side of a sheltered valley, scarcely bears a blade of grass or a tuft of heath. It is, therefore, necessary, as the first step, to discover whether the moor is capable of producing, or, in fact, does produce a sufficiency of the indispensable cover and food for the birds, embracing in large proportion the several plants enumerated in the foregoing chapter.

In a wet season, partridges, chiefly the young birds, are drowned out to enormous extent on the clayey lands; and the same causes which bring this about effect, in similar

fashion, the deaths of thousands of young grouse or "cheepers." Moorlands at any time are not the least rainy parts of the country, and when for five or six days in succession the deluge is repeated, they become neither the driest or the cosiest of outdoor habitations. On unsuitable moors, or those which by reason of their nature or situation are unable to run off the surplus water quickly, the ground becomes soddened, every little depression becomes a pool, and every gust of wind scoops the water out of the holes and flings it over the upstanding tufts and expanses, so that the grouse of mature age are hard pressed for shelter, while the young of all ages and sizes find it terrible work to withstand the wet, and in bad places go down before it in tens and hundreds. The necessity, therefore, of choosing a quickly draining moor is evident to the most inexperienced. The essential character of a moor may be said to consist in its unevenness of surface. A very slightly undulating expanse of closely heathered land is rarely so much affected by the birds as one abounding in abrupt irregularities, a good "up-and-down sort of place," in fact, where the projecting granite stones are found in clusters, surrounded by luxuriant growth of moor-plant, and where the brooks and burns are plentiful. In the more frequented and cultivated districts a belt of plantation, old or young, between the parts frequented by *genus homo*, and the domain of the *tetrao*, is not only a great advantage but an allurement to the birds, although they are not given to frequent wooded land.

Another very important matter is the surroundings of a proposed grouse moor. It may be very well to acquire a tract of land, and say you are going to rear grouse, &c.;

but when your neighbours happen to be sheep farmers, with a host of active little bovines on all sides, and for ever straying on it, or crossing it, or being driven at a wild gallop out of it, the matter assumes another aspect. It is not possible to have a wall to keep them out, and it follows that unless neighbours are agreeable, grouse-rearing is out of the question. Our advice to anyone wanting a moor is to acquire one in a part where grouse rearing and preserving and shooting is the only business. It may involve a tedious wait, but sooner or later one is sure to drop on the right thing in the right place, and if it be not already used for the multiplication of *Lagopus Scoticus*, so much the better, as the interloper will earn the gratitude of his neighbours who pursue the practice.

The establishment of grouse on land where for some time previously they have not been preserved, or scarcely ever been seen, is a work of some difficulty. That it can be done has been proved over and over again, as witness the large head of grouse on many manors where there were formerly none or very few. But it is a matter requiring a far greater amount of care, attention, and experience than the introduction of pheasants or partridges upon a wooded estate or a gentleman's farm. It is one, moreover, which requires considerably more *finesse* than most people suppose. Highland keepers and the north country "Johnnies" certainly bring a fair share of experience to work, but they bring as much tact and wiliness, which stand them in good stead in obtaining and keeping birds upon their lands.

Grouse to be turned down upon land must be obtained from places possessing similar characteristics of locality and

climate to that upon which they are to be introduced—at least, as much so as possible, for unless they are, the likelihood is that a large percentage will fail to establish themselves. The spring is the most favourable time for obtaining birds, and the autumn the next desirable. If in the spring, the earlier the better, as soon as winter is really gone, as there is then good opportunity offered the birds to breed during the ensuing months. In autumn young birds may be obtained and turned away sufficiently early for them to learn the ins and outs and resources of their new lands. The birds are best conveyed to their destination late in the day, and liberated at dusk. Some food may be scattered around in case it be required at first. Of course, the difficulty is found in the securing and conveyance of the birds. For the first, we should trust to a reliable keeper and to our own endeavours in the neighbourhood and elsewhere. There are many grouse moors held as commercial speculations rather than exclusively for sporting purposes, whose owners would be but too glad to earn the highly remunerative rates live grouse would bring them. The transportation is most easily effected in dark hampers and baskets; but as the birds will probably neither feed nor drink while confined, it is of paramount importance that the removal be as expeditious as possible. We would, however, rely far more on the hand-rearing of birds than on turning down, either for the nucleus of a head of game or the increase of the present stock. They are easily reared, and under any circumstances this is sure to be found the most practical mode. Of the details of this we shall treat in the following chapter.

The maintenance of a stock of grouse depends chiefly

upon the assiduity with which vermin is killed down and upon the careful protection of the game from poachers, but also to a considerable extent on guarding the birds against the evils incidental to sheep-farming and on the periodical introduction of fresh blood in the shape of eggs brought from a distance, hatched out either under a hen grouse naturally or hand-reared and turned down. Moors will sometimes get game-sick, and the production of a super-abundance of birds will often bring about an epidemic "disease," which will be set down to a dozen causes other than the right one.

CHAPTER XIV.—THE RED GROUSE.

Hand-Rearing.

THE hand-rearing of red grouse is for various unexplained reasons generally tabooed as very troublesome, unsuccessful, and unproductive. It is, however, by no means so fraught with disadvantage as is supposed. It is not, of course, the comparatively easy matter that pheasant-rearing is, but it is at the same time practicable, and if embarked in and carried out seriously, a very feasible and useful undertaking for the gamekeeper, whether amateur or professional. Two reasons may be adduced on behalf of its more general adoption—the time it saves which a game-sick moor would otherwise take to recover itself, and the scope it affords for providing fresh blood on moors somewhat taxed by their head of game. There is nothing practical to be done in the way of semi-domesticating birds, and obtaining their eggs for sitting. Eggs must be obtained under natural conditions, and, moreover, in a careful and considerate manner; otherwise the mere abstraction of one may cause the nest to be deserted by the mother bird, while disturbance, whether by man or dog, after incubation has commenced, will in nine

cases out of ten result in abandonment. It is necessary, therefore, that great precaution be exercised in obtaining eggs, whether from a distance, or from one's neighbours, for, instead of being quite fresh, it is possible that the eggs of several disturbed and partially incubated nests will be supplied, with the result that much time, trouble, and many opportunities will be lost. As it will rarely be desirable to rely on eggs from one's own birds, the importance of attending to this matter will be easily seen. The distance from which the eggs are brought need not be great, provided they be the produce of birds which do not in any way intermix with those whose numbers it is intended to augment or improve. Grouse are laying, of course, much earlier in the season than pheasants or partridges; consequently the arrangements for rearing must entail somewhat more trouble; besides, the habits of the birds must be taken into account in greater degree. The rearing of these game birds is, however, the exception rather than the rule; consequently large permanent preparations are not required, and what may be termed temporary makeshifts take their place.

The first consideration must be the site for the breeding operations. If there are facilities for rearing the birds on the open moor or the borders of it, so much the better, and provided there is a keeper's lodge or cottage within handy distance, it must be utilised. If, however, this be not forthcoming, and recourse must be had to some part of the home farm or an outlying one, then the best place to choose is some warm sunny spot, either in the corner of a field or the side of one of those broad, rutted, rough tracks called "roads," through the farm, or the bank beside a plantation—

in fact, any place where sun and warmth predominate, and where vermin and intruders are unknown. Should such a place be decided on, the matter of shelter is easily met, but on the open moor the case is altered. The vicinity of a small lodge or house would be a source of protection, and the coops containing the youngsters could be moved so as always to benefit by it; while a supply of 5ft. to 6ft. wattle hurdles must not be overlooked as a means of warding off the wind, the rain, and the cold.

The instructions which we gave with regard to setting pheasants' eggs hold good, in a great degree, for those of red grouse. Thirteen or fifteen eggs are the best number to set, and a hen of the usual kind should be placed in the hatching box, shown at Fig. 4, page 28, on a clod of turf; the box should be protected further by being placed either beneath a temporary shelter of boards along a hedge, or have a cover about 2ft. 6in. by 3ft. placed over it slantwise, so as to keep off wind and rain, without closing up the box completely. If any number of sittings are being brought off at once, it is best to employ the hatching box, Fig. 3, page 27, set several of them in a row beside the hedge, and put up a shelter roof *pro tem.* Incubation occupies about twenty-four days, and as soon as one brood is hatched off, it must be removed to the place where it is proposed to complete the process of rearing. It is a great advantage if there be a small stream of water trickling near, but the ground must always be dry. The chicks require no confinement with the hen after the first day or two, and may be left to look after themselves as far as food is concerned, which they will pick up anywhere. It is advisable to note, how-

ever, that an abundance of clumps of rushes, spret, &c., is necessary, otherwise the chicks may go hungry. If you have heather near enough, large tufts of newly-grown foliage should be spudded up and brought to the rearing ground, and the youngsters will duly appreciate it.

The best coop is the large rearing one and run, Fig. 6, facing page 32. This, in its entirety, is employed the first few days, and the young grouse-chicks are fed within it. Give them precisely the same food as young pheasants the first day or two, omitting, however, the several exceptional articles of diet named as useful stimulating agents. After three or four days the run may be removed, but we prefer to take off the outside end, and so enable the young birds to run in and out of their own free will, whilst furnishing them with the protection the run affords against winged vermin. It is also advisable to keep some traps set at all likely points where cats (wild domestic ones), stoats, pole-cats, &c., are likely to attempt an entry. Every day, or on alternate days, some of the berries which grouse claim as a portion of their food should, if possible, be collected and scattered about where the young birds may find and pick them up. If the supply of natural food be found scanty, as it probably will unless a well adapted spot be chosen, it will be necessary to provide some artificial food, which may be given night and morning; it should take the shape of that recommended for pheasants at a similar age, with the exception of the grain, which must be limited to oats, wheat, or barley. The broods, as they become older and increase in size and strength, will require more careful watching, consequent on their developing an independence

of action which might lead them to roam too far afield by day, and to seek to take up their quarters beneath some bush or tuft of heather or brake by night, instead of finding their way back with the hens to their coops, to which it will mostly be found necessary to guide them, and close them in for the night. Young grouse, hand-reared, are not subject to disease like young pheasants, but many will often be invalided by such maladies as are brought on by the inclemency of the weather; for instance, cramp, catarrh, and the like. The treatment is as for pheasants. They will, however, die off sometimes in a most disappointing way; this is generally due to unsuitability of the site or mismanagement in the rearing.

As soon as the youngsters have acquired sufficient plumage and experience to fly a short distance, they may be taken away to a part of the moor not too thickly tenanted with birds, where they may be turned down at a spot where shelter, food, and "dryth" are plentiful, and whence they may easily reach and mingle with naturally reared birds, and learn the mysteries of grouse life. Broods of young birds so turned away should be visited every day or so, for a week or two, to make sure that they are thriving, and not being killed off by vermin, &c. At first, perhaps, a few oats and wheat may be thrown down every morning, in case, owing to inexperience of wild life, they may not otherwise obtain a sufficiency of food.

We are not aware whether it has been found practicable to bring red grouse into a state of semi-domestication, and obtain from them a large supply of eggs, as is done from pheasants. With black game it has proved satisfactory

and easy of accomplishment, but for red grouse reliance must be placed on bought and borrowed eggs to furnish the regular supply, while unset deserted nests, if properly looked after, will provide an additional one. Although the red grouse in its natural state is a wild shy bird, yet the effects of preservation and the turning away of hand-reared birds have together contributed to render them less scary and alarmed at the signs of human presence; hence we often find nests close up to outlying homesteads, shepherds' and keepers' cottages, and near the main roads, subject to all the incidental bustle and disturbance. Very often such nests are known only to the keeper, and yet get disturbed often before the full number of eggs has been deposited, sometimes after the incubating process has commenced. It should be a rule for anyone seriously disturbing a nest to immediately report the occurrence, and if this were done many a sitting might be saved, and hand-reared, instead of being lost. It will also occasionally occur that in the endeavours of a hen bird to divert attention from her brood, she falls a victim to some sheep dog. In this case, if the young be very recently brought off, they should be placed under some hen and reared instead of being left to their fate upon the moor. A large number of grouse might be saved every year were a better understanding cultivated between sheep farmers and grouse preservers. We shall return to this matter in a subsequent chapter.

CHAPTER XV.—THE RED GROUSE.

Diseases.

THE conditions under which grouse are preserved are so essentially natural that the diseases to which they are subject are far from numerous, and, with one exception, by no means virulent. They are for the most part incidental to the early life of the birds, or brought about by inclemencies of weather. The epidemic of "grouse disease" proper can only be accounted for by the altered circumstances of existence in over preservation. Young grouse in a natural state are subject to catarrh, chills, and a species of roup. All these are due primarily to atmospheric conditions. The first-named may occur in the young at any time before reaching the stage known as half-grown. The same, also, may be said of roup, but chills are mostly caught by the very young birds during more than ordinarily wet springtimes on the moors. Very little can be done to aid the youngsters to combat these maladies, indeed it is questionable if they are not better when left to take their chance. If one be always prowling about looking out for sick and weakly youngsters to convey to the fireside for

warmth and comfort, the disturbance to the broods generally must be far more prejudicial than the gain to individuals would warrant.

Drowning out is a common accident to young grouse, and carries off hundreds on some moors, not to mention the many old birds which fall victims to wet and exposure whilst seeking to protect their offspring. This chiefly occurs on flat expanses of moor, where the soil is "peaty;" the rain lies upon the surface accumulating in the hollows, rendering it necessary for the old birds to repair to the elevated spots and brave the wind, rain, and cold, with the alternative of remaining in sheltered places and being half drowned. The result either way is similar and alike deplorable. Endeavour should, therefore, be made to discourage the nesting and frequenting of birds on such undesirable parts of a moorland preserve.

At certain seasons and upon certain moors there often occurs an epidemic of tapeworm, which carries off hundreds of young birds, and even acts very prejudicially on the old ones, though they seem better able to cope with the malady, and consequently suffer, in respect of mortality, to a less extent. Tapeworm seems always present in some degree of virulence among grouse, but at certain times of the year, and in certain parts, it seems to get the upper hand, and to carry off birds by scores. How it is acquired or to what causes it may be attributed are questions scarcely answerable, because of the peculiar local character of the visitations. All the birds on one side of a broad expanding hill may be more or less affected, the young die off, some of the old ones follow suit, and those which survive bear

an emaciated appearance, testifying to the prevalence of the pernicious parasites; whilst, over the brow, the birds are quite free. Of course, the visitation does not always show such noteworthy features. It, however, rarely decimates a whole district, but rather small parts of several districts. While, too, it may be present in one season, it is absent in another, although the conditions of climate appear to be precisely similar. We cannot give a satisfactory reason for its occurrence. Tapeworm manifests similar characteristics among rabbits. At first we are disposed to put it down to wet seasons (one always puts such inexplicable occurrences down to wet seasons), but grouse—and rabbits too—seem to acquire tapeworm in dry years as well as wet ones; in good seasons and in bad. We have, however, come to regard this disorder — like "the epidemic"—as a result of preservation, and we fancy the same causes which operate in producing grouse disease also exert an influence in outbreaks of tapeworm. These causes we shall enumerate further on.

The disease termed the "grouse epidemic" is unfortunately too well known, as far as its effects are concerned, to warrant our entering into any description of it. Sportsmen, naturalists, and scientists have for many years been studying the malady with a view to learn more about its cause or causes, and to ascertain if any remedial measures can be discovered. We cannot personally advance any new theory regarding grouse disease. We confess we are not strong on theories, but we are at least convinced of one fact, and that is that grouse disease is not due to one simple cause, but to a combination of several. We know the

learned ones have sought to pin its origin down to one, but in nearly every case where anyone has advanced a theory as to its probable cause, he has, as is the custom, declined to take cognisance of any facts not tending to advance his particular opinion. The nature of the disease is not clearly defined, but it is evidently a parasitic disorder, which in its symptoms greatly resembles the cholera of the human subject. Three well-known authorities on game birds and game preserving all advance different causes for the malady. The author of "The Moor and the Loch" attributes it to unwholesome food; the author of the "Birds of the West of Scotland" holds to over-protection as the cause; while Mr. Harvie-Brown attributes it, in a word, to over-preservation; and with Mr. Harvie-Brown we unhesitatingly agree. Over-preservation includes overstocking and bad food. The staple food of the grouse is the tops of heath and the fruit of the heather berry, be the other articles which afford it nourishment what they may. Consequently, if by overstocking we render the food unwholesome or unpalatable, we have an excellent reason for the birds becoming unhealthy. The heather on a moor may be affected whether grouse are too plentiful or not. Heavy and continuous wet; hard frosts and cold winds; sheep pasturing upon it. When, in addition to this, we have large quantities of grouse to feed upon it, that it should speedily go out of condition is reasonable and likely. The same state of things may tend to aid the development of diseases of similar nature to the liver fluke of sheep, only occurring in the grouse, the body of which is by the season and the state of its food brought so low as

to be peculiarly susceptible to the attack of any such entozoa.

As to hawk destruction also being a cause of grouse disease, we must not say too much. So many sportsmen seem so to regard it seriously that one is almost inclined to think there is something in it. But looking at the conjecture with a desire to see it in a favourable light, we cannot but shake our heads and "ha'e our doubts." For our part, we think the idea preposterous, and we have given it much consideration. Were it not for the support it has received of some sportsmen of note, it would, we feel, be scouted. As we said before, we have no hesitation in setting down grouse disease to one cause and no other, viz., preserving, or rather overstocking. To one who has any experience of game preserving, this will sufficiently account for the outbreak of disease among game, whether furred or feathered. It is the rage for big bags that has brought about this malady, and if we go back to the first outbreak in districts hitherto free, it will be found to have occurred on that moor, or moors, where the birds were most plentiful. Up to a certain point there may be no limit, but just as one hen more in a poultry run causes many little ailments to break out, so the overstocking or sickening of the ground is, in our humble opinion, accountable for the outbreak of grouse disease. In some years the character of the season wards it off: at others, when the weather is cold, wet and unfavourable, and the birds are thin and in poor heart, disease comes upon them and they die off by scores. Hard winters are said to cause grouse disease. Why, forsooth? Because the birds come down into the farms, eat oats and so

forth, and get into fair condition. When the spring comes—and what a miserable heartbreaking time "gentle spring" is upon the moors! the fields bare, the moors as bad, warmth by day, cold at night, and wet every alternate twenty-four hours—what is the result? The grouse have a worse time than during winter. Some may gainsay this, as not correct, but let them try the months of February and March in the Highlands, on the Welsh hills, or the Yorkshire moors, and then say whether they would not prefer a little winter weather pure and simple.

Against grouse disease there is no remedy beyond being watchful not to overstock. Keep on killing; if the birds are wild and you only get three or four brace a day in late autumn, it helps to reduce the stock, and you may be sure that next year there will be no scarcity of strong healthy birds and no disease, provided you take care of the stock during winter and the trying days of early spring.

CHAPTER XVI.—THE RED GROUSE.

Protection.

PROBABLY no kind of game offers such facilities to vermin and poachers as red grouse; yet in addition it suffers considerably from the molestation of farmers and shepherds, who—we speak of those of evil intent—although practising arts equally reprehensible with those of poachers, yet manage so to veil their malpractices as to keep outside the pale of the law. Whatever may be said as to the wildness of moorlands, and absence of animal life upon their slopes, those who go in for preserving grouse will soon find that animal life is by no means absent, particularly that of a predaceous character. Both furred and feathered vermin, notably the former, seem to be but too well aware of the opportunities and scope these highlands offer for the exercise of their predatory habits. Grouse suffer at all times from the attacks of the weasel tribe, stoats and polecats on the half and full grown birds, weasels on the eggs and chicks. The wild cat, which is far from being extinct throughout the less cultivated and barren lands of Scotland, Wales, and the northern counties of England, also preys considerably upon grouse, and is ably

seconded by its once domesticated imitators. In Scotland, the fox is for the most part vermin, and does not fail to maintain its character as far as grouse are concerned. In some of the wilder moorland districts the badger is still fairly plentiful, while the martens also occasionally give evidence of their presence. Nearly all these vermin should be killed down, but exception may be made in favour of the badger and marten, which are already too scarce in these islands; and much as we may deplore the damage these animals commit, yet some grace may be extended to them. In districts where sheep share the land with the grouse, and what are called "collies" and "sheep" dogs abound, much damage will be done by many of these, which go in for poaching game, generally because they are half starved at home. They are easily trapped, and they should be, not only by reason of their individual malpractices, but because they seem to entice other and well-behaved dogs to share in and acquire the knack of their nightly depredations.

As to winged vermin, the same may be said of their opportunities for destruction as of the furred. Crows, magpies, jays, all are equally mischievous; but probably the superiority in numbers of the first makes them the worst feathered enemies of moorfowl. Of hawks we must speak reservedly, as many authorities on grouse and grouse moors have lately been seeking to show—as we mentioned in the foregoing chapter—that hawk-destruction is one of the causes which have contributed to the increase of grouse disease. We may as well say that we do not hold so evil an opinion, speaking from the game preserver's point of view, of the hawk tribe, as is usual among the class, and

we hope, when we come to consider it as vermin, to put a less unfavourable construction upon the habits of several of these beautiful feathered denizens of our isles. With regard to grouse, however, the predacity of the hen-harrier and the kestrel may be cited as conspicuous.

The poaching to which grouse is exposed may be divided into poaching proper and wanton destruction. Of the two we much prefer the former. The men, again, who poach grouse may be distinguished as those who poach for mere sport and pleasure, and those who practise it purely as a means of making money; the former are generally of a good class, free-handed with their spoil, comparatively open in their operations, and brave. The right of sporting used to be theirs, they look upon preservers as interlopers, and if necessary are prepared to defend themselves against arrest. They are in every way true sportsmen and well worthy of being won over if possible. The offences of such men, if not barefaced and wholesale, we should be inclined to look over, but let it be known that, once caught, they will be subjected to stern measures. The poacher for profit is very different and is recruited from the ranks of idle labourers, bad shepherds and the frequenters of the ale house. He prefers to carry out his operations in secret, unknown to anyone, except his accomplices, and invariably resorts to the most stealthy and unsportsmanlike methods; netting in its dozen-and-one forms is the favourite trick, while snaring and hingling and springing are also much resorted to. This is the person who owns a consignment of grouse arriving in London on the 10th or 11th of August, or perhaps before, which is exposed for sale in London long

ere the earliest train could arrive with its valuable freight of fairly and legally killed birds. This kind of poacher is essentially a night-worker. Dogs and nets by moonlight are his chief instruments. Then he is an adept in the use of the stick amongst coveys of young birds, which, when first away from their parents' watchful care, lie like stones, and are knocked down as easily as the proverbial puffin. Shepherds, who know all the poachers in the parish, are very adept at this.

The wanton destruction of grouse has largely increased of late years, and is due to a great extent to the want of tact of proprietors and of their keepers, but also to the hostile feeling between class and class, which has been so carefully nurtured by agitators. Farmers and their men are the chief delinquents. Under the pretence of driving sheep on to and out from the moor, an enormous amount of destruction is perpetrated. Sheep in flocks are taken at a gallop over ground where birds are thickly nesting, and sheep dogs are taught to hunt like spaniels, and drive game at every opportunity. It is during the spring and early summer when these brutes do most harm, disturbing the hens on their nests, and destroying the young and feeble broods unable as yet to find safety in flight. Swaling or burning the heather is another fruitful source of disaster, and one patent to the most inexperienced. As an instance of this, we can adduce a case that came under our own notice. About sixty acres of fine heather were burnt on a certain moor one Saturday in April ; subsequently walking across it, we counted no less than fourteen deserted nests of grouse. There is, therefore, some reason for avoiding swaling, and

taking steps to see it does not burn off your crop of birds as well as—to the shepherd also—the offensive heather. Of egg-stealing and of egg-destroying we need say nothing further than what we mentioned when treating of pheasants.

We have now described the furred, feathered, and clothed opponents to the preserver of grouse. The steps to be taken to thwart them are sufficiently obvious to need no comment. To poaching and its votaries we propose to devote a separate chapter later on; to vermin, several.

CHAPTER XVII.—THE BLACK GROUSE.

Natural History.

MUCH as *Tetrao tetrix* differs from *T. Scoticus* in its plumage, the difference is still more marked in the habits of these two game birds. The red grouse is essentially a moor bird, but although black game are for the most part found in and near moorland, they are a far more tree-loving bird. Wild, rough, half-cultivated country is what the blackcock prefer; where the ground is broken, the surface abrupt and irregular, where open moorland alternates with low boggy morass and thick, low coverted plantings or woods; these are the parts of Great Britain — not Ireland, be it noted—where the muirfowl loves to pass its days and multiply its species. It is, however, not a very discriminating bird, and if the march of cultivation has trespassed on its limits, it is quite ready to take up its abode on any odd expanses of moorland, common, or brush, obtruding amongst the cultivated fields, provided the spot be a fairly sequestered one, and its domain be undisturbed. The *beau idéal* of black game ground may

be said to be moorland that has been roughly ploughed and planted, up to the time when the trees begin to kill down the heather, sedge, and gorse. If parts of the ground be swampy, so much the better, in the black grouse's estimation; failing this, it will frequent the edges of more mature wooded growths bordering on the moorland, but this also being denied, it has recourse to the roughest, wettest, and most thickly covered parts of the upland wastes.

The black cock is found in many parts of Great Britain, where, however, it is not often plentiful, and while adapted to a far larger range of country, it is in no way so numerous as the grouse proper. This is one of our grievances. If the bird be so unexacting as to its haunts, why is it not more generally appreciated? To our mind, it is a far better bird of sport than the red grouse, and offering, as it does, so many facilities to the preserver, both in habitat and ease of hand-rearing, we are surprised that it is not more preserved. On every moor in the kingdom, from John o'Groats to Land's End, the black cock could be raised, and on a great many other places besides. Take one, for instance, Dartmoor, where thousands and thousands of acres are to be had almost for the asking, and scarcely any black game present, whereas formerly it abounded, but it has been killed and driven off rather than died out. And there must be many more similar cases. We have already lost the capercailzie, and are not certain whether we may get it back, and ere long we shall have let our stock of black game run out too.

The yearly course of the black grouse's life varies very considerably from that of the red kind. In the months of

March and April—earlier or the reverse according to the season—the packs in which the males have associated themselves during the winter are broken up, and each bird prepares for breeding, the habit being polygamous. A good deal of fighting goes on for the possession of certain much affected sites, and the old cock birds, as a rule, are superior in point of prowess to the young ones. Consequently, it is well that the old cocks should be cleared off as far as possible during the season, leaving the young ones opportunity to breed without hindrance. The nest is decided upon in May; it is of very primitive construction, consisting merely of a circular hollow in the ground, indifferently lined with such morsels of herbage as may be brought in by the bird. It is generally placed in a tuft of heather on the open moor, at a spot well sheltered and dry, yet near to water; sometimes in a low young plantation, at the base of some thick shrub or bush. We have also known it in a low hedgerow. The eggs, from three to thirteen, but averaging seven or eight, are laid invariably in the month of May, difference of locality and season apparently not influencing the matter. It is said that the hen black grouse or grey hen never "lays nor incubates till three years old," but this is incorrect, and though perhaps both sexes of the black grouse are longer in reaching maturity than their red congeners, we have every reason to believe that at two years, and even one year old, the females lay and incubate.

As soon as incubation commences the cocks desert the hens, and again congregate in small packs in quiet and secluded parts until the process of moulting, which now begins, is completed. The whole work of rearing and pro-

tecting the young is left to the female bird, and a very assiduous parent she proves herself, taking every care and pains over her progeny, and being always ready to risk her life in endeavours to distract attention from them. The young remain with the mother until autumn, when their first feathers are moulted off, and the birds acquire the full plumage which distinguishes the males from the females, between which there is till this time no difference in outward appearance. The broods are then split up, the old and young of each sex associating together apart from the rest. The males "pack" to a much more considerable extent than the females, often as many as fifty or more of the former being occasionally seen together, while the hens limit the number of theirs to about thirty. It must not be imagined that each and every bird joins these packs; on the contrary, a considerable number prefer to remain in couples, threes, and so on, and we have repeatedly noticed males and females together in these coveys.

The black grouse is somewhat eccentric in its habits, passing from part to part of a locality with extreme irregularity, and seemingly quite indifferent as regards both season and weather. But we have mostly found these game birds to be very chary of disturbance and danger, and to prefer at all times the most open places, only seeking shelter when compelled to do so by stress of weather and want of food. Black cock never visit plantations, low coverts, &c., which afford the more protection to the sportsman and natural enemies of the birds, unless induced by thick or stormy weather. It is said by some that the black grouse loves the woods. We have had a fair amount of opportunity for

learning its habits, and always found the farther off we went the more plentiful the black game.

This game bird is an early riser, always running the sun very close. For some weeks we made regular visits at short intervals of a day or so, sometimes before sunrise, to a moor after golden plover, and always found the black game in the bogs feeding, although their roosting place was known to us to be some distance off. During the day they move outwards, if possible, from the signs of human existence, or retire to the high and exposed parts of the estate, except, of course, in winter, when ofttimes the whole day is taken up in the search for food. This consists for the most part of the leaves, flowers, shoots, and seeds of many kinds of sedge, chickweed, and ranunculi, leaves of some few shrubs and bush growth, and the shoots and berries of the whortleberry, cranberry, cowberry, and bearberry, and the tender shoots of heather; besides these the shoots and soft needles of firs, leaves of ferns, and other like things. The bird, therefore, is easily provided for. During winter the range of food is considerably restricted, and often the supply is so difficult to obtain that the birds have recourse to the cultivated fields of the farmer, when hunger makes them often very tame. Black grouse should always be provided with corn, &c., during very hard weather.

CHAPTER XVIII.—THE BLACK GROUSE.

Preserving.

AS we have said, although the red and black grouse have much in common, still they differ in many respects, and under no circumstances are these variations more conspicuous than when their preservation is attempted. The most striking characteristic of the black grouse is its aversion to the sounds of human bustle and industry. When the preserving is taken up this becomes a serious matter, and unless one can guarantee quietude and the absence of regular and continued disturbance, the birds will not remain and increase; consequently the first consideration in reinstating a head of black game must be the suitability of the ground. From the foregoing chapter can be learnt all that is necessary as to the topography of a site, but the question of quietude is almost equally important. Possibly, some large expanse of land, such as a common, moor, or down, adjacent to, and upon which, are some number of more or less advanced woods and plantations and copse, may be available. It must be free from the grazing of sheep and

cattle and their attendant disturbances; from the constant crossing and re-crossing of persons at all hours of the day, and, perhaps, night too; and from the continual raids of packs of harriers and fox hounds. These conditions are a *sine qua non* of black game preservation, and unless they are attended to, a fair head can never be kept up, although by great endeavours a sprinkling of birds may be temporarily established, quickly to dwindle down, and eventually to disappear.

Bearing these provisos well in mind, the preserver can set about securing for himself the nucleus of a stock from which to build up a head of heath poults. Two ways are open to him—either to turn away part or full grown birds with a view to their reproduction, or to go in for hand-rearing a number of young birds. The first course means the purchase of a large number of, say, three-quarters matured birds at a good price, and risk attendant on the enterprise. For instructions as to procedure in this matter, vide pp. 111-13. With regard to a good many matters of black game preserving, our remarks in treating of red grouse hold good, and we shall for the moment devote attention to the hand-rearing of the black grouse.

In the case of pheasant rearing, we found the diseases to which the young chicks are subject to be the usual cause of failure, and although in the case of black game it is not exactly disease that produces the ill success, still it is when the chicks are at a tender age that the crisis is reached and that they are found difficult to treat satisfactorily. Up to the time when the eggs are hatched out, the instructions we have given for red grouse rearing hold good, but

on the matter of food during the first week or so we must make a distinction. The chief food black game chicks consume for two or three weeks is the seed and small flowers of a small rush termed the "spret" or "sprit," which grows very thick and close on moorlands and commons, and lone copse, &c., near and in boggy parts. Unless you can place the coop with the hen and chicks on a dry piece of turf near some small stream of water where the spret is abundant, you can expect but poor success. For the rest, the several styles of feeding recommended for pheasants are applicable, and if a good supply of spret-seed can be procured, it ought to be given as part of each meal. Besides this, much depends on choosing a good site whereon to place the coops and broods. We know no better than a low rough meadow with a small stream of water running through it, and along which there is a fair cluster of low brake, such as bushes of hazel and thorn, brambles and bracken, &c., or failing this, the sides of a sheltered mire, if in wooded ground so much the better. Although the chicks like to get about amongst the growth upon damp, wet places, they cannot stand rain and moisture in their coop; consequently it is necessary to watch them carefully at first, moving the coops whenever they appear to require it. After the broods are about three weeks or so old, they commence to gather strength and independence, and they should be left to their own devices, as much as possible, to procure food, until they are sufficiently matured to turn down, when they should be capable of providing their own sustenance, and be able to wing a lengthy flight. It is advisable to get the birds well out to quiet undisturbed places before turning them away, other-

wise they will stay about the place where they were reared to such an extent that when, next year, being fully grown, they seek to breed and incubate, they will possess many of the habits of semi-domesticated birds, with all the inherent wildness of moor-bred ones, and so many nids will be lost through the desertion of the hens. As it is particularly necessary that black game, hand-reared, should not be turned away till well able to fly, it is advisable, rather than confine them, to cut the wings, first one and then the other, or to secure one wing at alternate intervals by tying it up in the approved fashion. The maintenance of a stock of black game is effected by the same procedure as that necessary to introduce a supply; and an increase of the existent stock is only to be expected if the birds be kept free from disturbance, be looked after in winter, and be on a favourable estate. In these respects a good deal of what we wrote regarding red grouse holds good of the black grouse also.

Black game are not much exposed to poachers, but there are several causes besides vermin which may contribute to their diminution. The burning of the heather is one very fruitful cause, late hare hunting another, the hares and the grey hens seeming to select, about the nesting time of the latter, the same kinds of spots upon the moors for their forms and nests, so much so that whenever late hare hunting is countenanced, in districts where black game is plentiful, a very large number of nests and broods are annually lost through the disturbance by dogs, huntsmen, and the general following.

The vermin which are chiefly injurious to black game are, for the most part, the same that destroy red grouse. The

diseases, of course, are very similar, if not identical; but as far as our experience goes, grouse disease proper is practically confined to the red grouse; and although black game sometimes die off in large quantities, still it is not always, in fact very rarely, from "the epidemic" which decimates the moor fowl of the Highlands and north of England moors. In southern parts of the country, where no red grouse exist, the black game sometimes suffer very considerably from disease of a similar nature to that which, a season or two back, played such havoc with the partridges.

Though this game bird is one not easily poached, and one which alone does not pay for being feloniously killed, yet a good many are got by those who go in for hare poaching and moor fowl snaring and netting. It is a bird easily snared and easily trapped, where it exists in any great number, and the latter practice is the more often indulged in.

CHAPTER XIX.—THE PTARMIGAN AND CAPERCAILZIE.

OF the three divisions of the United Kingdom, Scotland alone is any longer able to boast the Ptarmigan among its game birds, and even there it is only the more northern part which can count the bird as its own. It is annually becoming scarcer, or rather, more limited in the range of uplands it frequents, consequent upon the progress of agriculture among the mountain parts it haunts. As far as preserving goes, it is beyond control, for although far from possessing the wildness and fear of man of the red and black grouse, it brooks no encroachment upon its domains. Hence the chief requisite is to guard its haunts from intrusion and disturbance in order to secure the remnant of the race, for they appear to be well able to cope successfully with their natural enemies, of which they have but few in the localities they frequent. .

The natural history of the ptarmigan is of considerable interest, chiefly by reason of the change of colour which comes over it prior to the approach of winter, when it assumes, in place of its summer plumage, which mostly

resembles that of the grey-hen, one of almost pure whiteness — a phenomenon which we further see in the mountain hare, the stoat, &c., and which is of use in affording the bird or animal so characterised greater immunity from the extremes of cold associated with the exposed regions it inhabits. The haunts of the ptarmigan may be described as the highest, most barren, and stony, of all the mountain districts of Scotland, north of the Grampians. They seem to choose the parts most exposed and showing least signs of verdure; indeed, anyone unaccustomed to the habits of this bird would consider it impossible for it to find sustenance on some of the expanses where it is most plentiful. There is no need to notice here all its habits, and to detail the points in which it differs from the grouse, for to all practical intents the mode of life is the same in both. Game preserving can hardly be made to reach these birds, although they are game, and highly esteemed as such by many sportsmen who are great enthusiasts for ptarmigan shooting.

To the Capercailzie, however, the game preserver may with great benefit extend his sheltering arm, for, in the absence of that protection, it had already once become extinct; but, thanks to several ardent admirers of this noble game bird, it is once more reinstated in our preserves; still it will want much considerate care before again becoming fairly general as a bird of sport. It may therefore be not uninteresting to recapitulate the history of its re-introduction.

It was in 1827-8 that an attempt was made for the first time after the complete extinction of the bird to re-introduce

it, but it failed, and not till 1837 were any serious endeavours repeated. Under the directions of the late Sir Thomas Buxton and the late Mr. L. Lloyd, a number were imported from Sweden and turned out in the woods at Taymouth. Rearing by hand was, at the same time, tried, but practically, failed. In 1841, however, eggs were hatched under wild grey hens, chiefly in the woods of Drummond Hill, and this mode of rearing, coupled with subsequent successful hatching under fowls and hand-rearing, resulted, in the year 1865, in the Marquis of Breadalbane counting some 1500 head upon his estate. From this centre the breed has increased and become fairly plentiful all along the valley of the Tay as far as Dunkeld, the estates of the Duke of Athole and Lord Breadalbane being peculiarly suited to the habits of these birds. They have now extended, in greater or less number, into the surrounding counties, and eventual abundance in all suitable parts of the country is only a question of time, interest, and money. At the time we write, however, there appears to be some uncertainty as to whether the capercailzie is legally a game bird, although hitherto always regarded as such by sportsmen. It is necessary that this point should be cleared up, and if there be any technical peculiarity excluding it from the protection afforded its congeners, the sooner it is rectified the better.

The capercailzie is essentially a bird of the woods, although not by any means confining its life to an existence in the trees. The greater portion of its time is spent beneath the boughs, but during cold and snowy weather and at night time the bird perches, and prefers to remain amongst

the branches. It is shy, and mostly seeks safety by running, so that its chief quality as a bird of sport lies more in the difficulty of getting near it than of shooting it when seen. Its haunts are typical of the country from which it has been re-introduced, namely, Norway—among the thickest parts of beech and fir woods, in the wildest, rudest brake-grown sides of the deep valleys through which many of the Scottish rivers meander.

In the early part of April the first pairings are commenced, and a month later the nesting. The nest is made upon the ground, generally beneath the shelter of some thick bush or tree, and among long sedge grass, or heather, and is a rough structure after the manner of the black and red grouse. The eggs number from four to eleven, and require thirty days to incubate. The hen alone sits, the male keeping guard. The young are looked after and protected by both parents for some time, but the cock bird leaves the brood first and the hen subsequently, generally when winter makes known its approach. The capercailzie is monogamous.

These game birds have for their food very similar materials to that of the common grouse; chiefly may be enumerated the several sorts of cereals, when obtainable, black, cran, and juniper berries, the leaves and shoots of fir, the buds of the birch and willow, and several other trees, and a fair amount of insect food. The young require various insects, chiefly ants, and worms.

Further particulars are unnecessary here, but we may venture to express a hope that all who can will endeavour to assist to the best of their ability the eventual re-intro-

duction of this fine game bird throughout all those parts of the British Isles which are suitable to its existence. Our list of game, both furred and feathered, is already small enough, and we certainly cannot afford to curtail it.

CHAPTER XX.—THE QUAIL, LAND-RAIL, BUSTARD, SNIPE, AND WOODCOCK.

NEITHER of the five birds whose names head this chapter are, strictly speaking, "game," yet for all individually and collectively the sportsman is required to take out a game licence before he can legally shoot them. Such being the case, we consider they demand notice in this work, although the extent to which they can be preserved is somewhat limited, particularly in the cases of the snipe and woodcock.

The Quail.—Throughout several parts of the British Isles, the quail, during the months between May and October, is more or less plentiful, in some parts so much so as to afford a very fair quantum of sport taken in the intervals between that afforded by other game. Although not a permanent inhabitant of these isles, making, as it does, annual migrations between this and more southern climes, still a large number remain with us from year's-end to year's-end, and also breed here; hence we think it deserving of more attention from the game preserver than it is usual to afford it.

In habits it is somewhat similar to the common partridge, choosing either the same localities or those of the same features, avoiding, however, to some extent, such higher lands and wet marshy parts as the partridge sometimes frequents. It is, moreover, a bird which spends its whole life upon the ground, and finds its food, which is similar to that of the partridge, in the same way. It differs, however, from the partridge, inasmuch as it is very unsociable, and exercises its pugnacious propensities at every opportunity.

The quail is generally supposed to be polygamous, but this is certainly not the rule, and we are of opinion that, in general, it is monogamous, but that frequently it is not. The pairing occurs at different times in the spring, as the birds have wintered here or not, those remaining with us being from three to four weeks earlier than the larger portion, which only arrive in this country about May. The nest is a very unpretentious arrangement, being merely a slight hollow formed naturally or by the bird's scrapings in the soil, and containing such dry leaves, &c., as may accumulate in it. The eggs vary considerably in numbers, and although from twelve to twenty are laid, a somewhat poor percentage seems to result in mature birds. The female carries on the process of incubation alone, but the male remains in attendance, on and off, meanwhile. This occupies about twenty days, and the young run and feed as soon as they leave the shell, which is towards the middle of July.

The food of the quail is very diverse, and its presence is valuable to the arable farmer, as will be seen when the

following list is scanned through: The seeds of the chick-weeds, vetches (wild), Persicaria dock, plantain, orache, rushes, and spret, the more succulent green portion of these and many other plants, grain in very small quantities, slugs and ground insects of all sorts. The quail is a fairly hardy bird; indeed, considering the semi-tropical parts from which it is said to spring, it is uncommonly hardy, but it becomes very poor in winters when there is much snow. As a bird of sport it is much derided, and it is said to be an arrant creeper. We think otherwise; if one has a sharp, bustling dog they get up quickly and well, and are not half-easy to be certain of. This being so, there is certainly some reason for advocating a more extensive recourse to the quail for sporting purposes. It is a well-known fact among those who are qualified to speak upon the subject, that the quail is capable of preservation. If a dozen or so be kept some little time, say a month or so, in confinement, and be then turned out in the fields, they do not migrate, but take up their permanent abode and breed in the near neighbourhood of the place. Quails, unfortunately, refuse to breed in confinement. We had some for several years in a run of fair size, but they never seemed to show an inclination to breed. What they might do when kept within a large area, say a wire-netting inclosure of some 30 yards by 20 yards, we cannot say, but should judge they would be equally implacable. Hence a considerable difficulty, as eggs thus become practically unobtainable. Under the circumstances, it becomes necessary to purchase birds if one would seek, by turning them away, to originate a small stock. In the months of April and May enormous

numbers are imported into England from Italy, Egypt, and the shores of the Mediterranean, from a quarter to half a million coming annually to Leadenhall Market alone. They can be bought alive and in good condition, at the wholesale price of about 5s. per dozen, and are, therefore, sufficiently cheap. They are suited to many parts and to many people to whom a large supply of partridges would be impossible. They require no trouble nor care beyond the killing down of vermin and a little feeding in severe weather, during winter, and afford a very fair modicum of sport of a kind which, in our humble opinion, is by no means to be despised. We therefore cordially invite those whose means are limited, or who are interested in these matters, to take up the question of establishing the quail as a modest, but not unworthy, addition to our small list of game birds.

The Landrail.—This is another migratory bird, with a seeming disposition to remain and winter here if possible. They arrive about the first week in May, but sometimes earlier, the southern counties coming in later, curiously enough, than the northern ones, for their share. As a game bird it is of poor value, being very adverse to flight, always seeking protection, if possible, by dodging about amongst the corn and long meadow grass it loves chiefly to haunt. It is a shy, fearsome bird, and practically will not become domesticated. As far as preserving goes, it lies outside the pale, but affords some little sport now and then when one is beating for partridges, and is a fairish bird in respect of gastronomic qualities. It is not to be encouraged on well-stocked partridge land, being, by reason of its habits, very injurious to the working of setters and pointers.

The Bustard is now, in all such respects as interest the game preserver, a thing of the past; we only mention it to express a hope that some day it may be re-introduced, as has been the capercailzie.

The Snipe and *the Woodcock* are both entirely migratory, although regarded by the law as game, and considered and treated as such by the majority of sportsmen; consequently they do not come under the game preserver's protection more than as regards securing their immunity from molestation by poachers and vermin. This, of course, is provided for in connection with other game. Nothing, moreover, can be done in the way of providing increased inducement for the flights, so-called, of these birds to remain in and about particular spots and localities, beyond the mere maintenance of their favourite haunts free from disturbance except by sportsmen.

Of the snipe, even more than of the woodcock, it may be said that a much larger percentage remain in these islands for nesting than is generally supposed, and of the latter we are inclined to think that the number which do so is annually upon the increase.

PART II.

GROUND GAME.

CHAPTER XXI.—THE HARE.

Natural History.

WE now arrive at the consideration of the furred members of the covert—Ground Game, as they have lately been named by Act of Parliament, and of this description the Hare and the Rabbit are the only representatives. Moreover, neither of these comes under the general laws for regulating the killing of game. For neither hares nor rabbits is there any close time in this country, although the former possess one in Ireland. They depend, therefore, for their existence in Great Britain wholly upon game preservation, for without that both hares and rabbits would, as far as sport goes, be things of the past.

There are two, if not three varieties of the hare in these islands, viz., the common hare (*Lepus timidus*), and the Scotch, Alpine, or Mountain Hare (*Lepus variabilis*); the third, if it deserves a separate class, is the Irish Hare (*Lepus Hibernicus*). The aspect of the first-named is too well known to need description, but the mountain hare (we consider this the best name for it) varies somewhat in colour, the ears are shorter, and are tipped with black. In size it is less

than *timidus*, and it goes through the process of changing its coat to white during the winter months, which renders it most noteworthy. The change is gradual, commencing from the middle to the end of September. The feet change first, the white passing upwards over the legs, and gradually extending until all but the back is white, this portion of the body maintaining its summer colouring longest, until somewhat suddenly the process is completed, and the whole animal becomes of a beautiful glossy white, the tips of the ears alone remaining black. The process is not in this case a shedding of the coat, but is an actual change of colour in the fur. But the return to the mountain hare's natural hue is really a shedding of the fur, commencing generally in March, and being completed about the second week in May. The Irish hare (*Hibernicus*), on the other hand, is of similar colour to the common variety, but is considerably smaller than even the mountain hare, and is consequently greatly inferior in point of size to *Lepus timidus*. In habits they differ scarcely at all. The "Scotchmen," however, vary in their ways in a sufficiently obvious direction, but practically the common hare may be regarded as a type of all three. The hare is almost as deserving of the epithet ubiquitous as is the rabbit, for although the latter may be more numerous throughout the country, it is not more general than the hare, which will thrive and multiply anywhere, so that it be afforded a due measure of protection from man, beast, or bird of predacious habit. True it is that in some districts hares are apt to become extremely scarce for spaces of time more or less prolonged, but this is more often the fault of the owners and tenants of the land than due to mere unsuit-

ability of soil and locality. In its choice of habitat *timidus* is very curious, evincing as much fancy for some particular spot as aversion to others, and this, with its peculiar habits in regard to leaving and returning to its form, renders it very easily poached and very exposed to vermin attacks, although its inherent timidity and powers of scent, sight, and hearing somewhat counterbalance this defect.

The hare is a far more prolific animal than is generally supposed, but as its productiveness is generally compared with the superabundant fecundity of the rabbit, this trait is often overlooked, but a consideration of the time occupied in producing successive litters soon shows that it is an error to suppose it wanting in prolificacy. It does not pair, and breeding is carried on more or less during the whole year, according to the nature of the locality and the season. Thus moorland hares are less prolific than those inhabiting richly cultivated districts, and from two to three months during the winter season breeding entirely ceases. The period of gestation is thirty days, and the young are generally two, often three, and sometimes, but rarely, four at a birth. They are suckled three weeks or so, and by the end of one month are able to provide for themselves, so that it would be possible for one doe to produce from ten to fifteen young in twelve months, and two of the young, say, four more. This supposes two at a birth, and the young to be nine months old before breeding. The form where the young are brought forth is, as a rule, of the rudest description, the doe making no provision in the shape of a nest or the like, although sometimes roughly-scraped holes are found in which she has kindled, but, as a general rule, the merest

shelter is considered sufficient, and the young are deposited upon the bare ground.

The hare does not pass so varied an existence as does the rabbit, any place which affords it a reasonable amount of shelter from rough weather, security from its enemies, and a good supply of food, seeming to possess sufficient attractions for this animal in its choice of habitat.

CHAPTER XXII.—THE HARE.

INTRODUCTION AND MAINTENANCE OF A STOCK—HARE WARRENS, &C.—CATCHING HARES—DISEASES—PROTECTION.

ANY locality where hares are occasionally met with may be considered suitable for re-establishing or increasing the stock. Various causes have at different times contributed to a great diminution in the number of hares in some districts. Three of the most prominent may be briefly mentioned: Late hunting, poaching, and the increase of rabbits. The first is an unpardonable, but not the less frequent sin against sporting interests, and the second is preventable; but the last requires a word of special comment, because it has been said that the increase of rabbits on an estate will not hinder the hares in the least. It is certain, however, that one cannot have a half-and-half warren and preserve a good stock of hares, and if a head of the latter be wanted, the conies must be kept down.

A stock of hares can be produced in two ways, either by buying some and turning them down, or by the organisation of a hare warren as a nursery. In either case it is absolutely

necessary that all vermin be killed off, especially stoats, polecats, poacher-cats, crows, and hawks. The best time of year for turning hares down is the late spring, say the month of May, and it is best to turn away young hares, the does if possible to be in kindle.

If a hare warren be decided upon, it may vary in size and scope according to the number of hares required and the purpose for which they are wanted. If only to form the nucleus of a stock upon a preserve, the warren need not be of very large extent, and may consist of about an acre or so of suitable land. For this purpose one cannot do better than select a small spinney or piece of not too closely-set copse, and inclose this, together with a good piece of rich, quick-growing pasture. It is necessary to inclose it effectually, and to this end a carefully put up boundary of strong wire netting is best, but it must be of fair height, otherwise vermin will get in and the hares get out. From 4ft. to 5ft. is not too high, and large mesh netting should be chosen, being both cheap and suitable. When foxes and poaching dogs and cats are numerous, it is sometimes necessary to put up a sufficiently high wooden paling to keep them out, but as all these three classes of animals would, prior to jumping over a boundary of wire netting, make a careful survey all round with the view to find an opening, it follows that they should certainly be caught in some of the traps set for the purpose of effecting the capture of such marauders. If the warren is to serve as a hare supply for coursing meetings, it must, of course, be considerably larger, and constructed upon a different and more permanent plan. The fence is generally of large hurdles, so called, of wire netting,

and at intervals there are mewses through which the hares are driven out. These, however, do not come within the scope of game preserving, being properly a portion of the courser's business. Into the warrens a certain number of hares are turned, an equal proportion of young does and bucks, and allowed to breed. A certain amount of attention and care for the stock is necessary, but otherwise they may be left to themselves, and the produce caught and turned away as they mature. It is best to obtain the breeding stock from a distance; it should be changed every twelve months, and new blood continually diffused in the preserve.

As a subject of sport the hare, as far as shooting goes, is but second-rate, and far inferior to its relative, the rabbit; but as an article of food it is in great request, and if an estate can be made to produce a large number besides the regulation pheasants and partridges, the sale will go a long way towards paying the expenses of the bird-raising. In this case, the hares will require killing down independently of the pheasant and partridge shooting, and the best way is without having recourse to the gun. Hares may be either trapped, snared, or netted. The second of these modes is not uncommon, and the first-named can be made effective; but the last is the means chiefly put into practice. For full particulars as to trapping, snaring, and netting hares, we must refer the indulgent reader to our "Practical Trapping."*

The diseases of hares are not many, but in some seasons

* Practical Trapping: Being some Papers on Traps and Trapping for Vermin, with a chapter on General Bird Trapping and Snaring. By W. Carnegie ("Moorman"). London: L. Upcott Gill, 170, Strand. In paper, price 1s., by post 1s. 1d.

an epidemic seems to fall upon and decimate them. It is similar in its nature to the liver rot, and is traceable to some extent to too luxurious feeding and continued wet weather.

The hare is exposed to the attacks of all kinds of vermin, of which the stoat is remarkably persistent, so much so as to have become proverbial, but polecats, weasels, wild cats, and poachers' dogs are very destructive; the fox also is included in the category of enemies. Of winged vermin, crows, magpies, and hawks kill a large number of leverets, and the hedgehog is also very mischievous.

The poaching of hares is generally looked upon as a very lucrative employment, and finds many votaries. Shooting from the high road, and at the hedgeside, snaring proper and hingling, are the more obvious methods; but a peculiarly interesting adaptation of netting, performed at night, is the most wholesale and difficult of discovery. Having learnt a little about this kind of poaching, we will endeavour to show how hares may be caught alive. The only requisite is a good dog, and unless it be a good one it is of no use. These dogs are supposed to be lurchers, but there are many old sheep dogs, or old pointers that have never been broken, which take to this pursuit of their own accord, and, of course, prove unequalled in it. We cannot give our readers a better idea how to proceed than by narrating a supposed evening's sport with a pair of accomplished poachers. To commence, then, we will suppose that we have arrived at the gate of a field opening out on the road or avenue leading up to the house; in this field there are several hares, either still feeding or retired to their forms for the night; the evening is fine, a heavy mist is rising, and it is just getting as dark as it ever

becomes on a fine summer night. The gate is carefully opened and put back, and one of the men produces from his inside pocket a large net, which he proceeds to extend across the gateway, making the lower part lie on the ground about six inches, on the side next the field. The other now brings forward the dog, which, in the uncertain light, seems to be of no breed at all, or of every breed combined. As soon as the net is ready a sign is made to the dog, and off he goes. Meanwhile the men crouch on each side of the gate, one inside and the other outside the field. Now let us endeavour to follow with our eyes this intelligent dog; making a start, he goes off at a gentle, silent trot, keeping about 5yds. out from the hedge and working in zig-zag form round the field. Having found nothing by the time he returns to the gate, he turns and goes back, keeping this time about 15yds. out from the hedge, but still working in a zig-zag. This he continues to do, covering all the ground that he has passed until at length a hare is found. It is then that we see the wonderful sagacity of the animal, that is if it be not too dark. Let us mark him closely; he approaches the hare, until at length with a bound he puts it up. No vain endeavour is made by the dog to catch the hare; no! all that he has to do is to drive it to the net, and prevent it from escaping at any other point of the field. First he is on one side of the hare and then on the other, until at length, after turning her several times, he considers that she may be chased into the net. Being now tired of trying to escape by the hedge, she notices that the gate is open, and accordingly makes a rush for it, but just as she goes to leave the field some invisible substance bars her further

progress, two of her long-legged enemies jump up, and before she has time to give one cry, poor puss is caught, seized by the hind legs, and then "does not remember anything more."

A look round is made to see if all be right, and the dog starts once more. Again a hare is found, but this one is more determined to escape than the other, for she has some faint notion that all is not as it should be, and she accordingly makes headlong for the hedge. In vain our dog tries to turn her, but in vain does she try to get to the hedge. Why? because "Jeup" keeps edging her gradually parallel with it until at last she sees no chance but the gate, and an unhappy chance she has there.

The dog tries the field once more, but it is unproductive of further sport. We go on to a second field; the gate is opened, but one of our men notices a few briars and bits of thorn on the ground. He closes the gate again, remarking to his companion, "Brammels!" This field is not touched, for be it known that Velveteens placed those "brammels" there in order that we might move them, and thus give him information as to the nature of our visit.

CHAPTER XXIII.—THE WILD RABBIT.

Natural History.

NO inconsiderable portion of the game preserver's time, in nearly all parts of the country, will be taken up in his endeavours to keep down the number of rabbits within reasonable limits; consequently, an intimate knowledge of their haunts and habits is indispensable.

Rabbits usually live in small colonies, each composed of one, two or more families, who are on good terms with one another. These colonies are formed in the latter part of spring, and continue up to the end of autumn or the commencement of winter. They are commenced by one or two does and a buck that may have wintered together in the same burrow. As soon as the season permits, this little community takes up its abode in a burrow suitable to its requirements, while the does construct their nests in small holes adjacent. Directly the first litter are sufficiently matured, the doe leads them to the burrow, and meanwhile prepares for a second, and so the colony is added to month by month until it becomes too populous, and subsidiary ones

are formed by the young rabbits, until within a comparatively short time the original pair have multiplied a hundredfold.

We will now take a view of the haunts of rabbits during the several seasons of the year, commencing, as is most fitting, with spring. During the period from about the 1st of March to the 1st of May, they dwell almost entirely in burrows, constructed in hedgerows or banks, or in the ground, and are careful to find their feeding places as near their burrows as possible. In summer, provided they be unmolested, rabbits delight to pass their time in the open air, basking in the sun, or sheltered from the mid-day heat under some branch of bracken or bramble, perhaps, also, at the root of a tree, but in all cases within easy reach of the sheltering burrow, so that should danger or inclemency of weather threaten, they may at once retreat to it. They also affect the coverts during summer, one of open copse or brake being preferred. During autumn, the spring and summer haunts are in equal favour, according to the state of the weather. In winter small and warm burrows are sought, and one that leads under a large tree or stone is preferred. In fact, the warmer the burrow the less irksome do the rabbits find the winter, which, to them, is one of no small discontent. Spring is the season in which rabbits do most damage to corn crops, and spring and early summer the time when the pasture fields suffer most from a superabundance of rabbits on the farm.

Of the wild rabbit it is often asserted that there are four varieties, but we never saw but one kind. In some localities they vary in size and colour, but by no means sufficiently so

to warrant a distinction. The only true varieties existent are the result of crosses between the wild rabbit and some kind of tame ones turned down amongst the original conies. If left uncrossed for a generation or so, they, however, soon revert to the colour and size of wild rabbits. The Silver-grey has of late years been so largely cultivated as a wild rabbit, and lends itself so easily to the condition, that there is some reason now for claiming two varieties for this country. The silver-grey—of which more anon—has, moreover, the merit of retaining, to a very remarkable extent, its peculiarities of size and colour for a considerable time after becoming wild. The similarity between the rabbit and hare begins and ends in a mere resemblance of form and habit; structurally, they are widely different and incapable of inter-breeding, although persons have often claimed to be possessors of hybrids.

The rabbit is almost wholly indifferent as regards locality and surroundings, and seems to get on pretty well in even the most unsuitable and inhospitable parts. Notwithstanding, they have their peculiarities like other animals, and particularly as regards sites for their burrows, and the expanses they frequent. In some parts it is almost impossible to get together a dozen head per annum, while in others all efforts to exterminate them are futile. As far as concerns our present purpose, we have to take cognizance only of the rabbits on the farm and on the game preserve, or rather on the farmed lands comprised in a large sporting estate. The Ground Game Act has of late greatly agitated those interested, and done little good one way or other, but a great deal of harm. Rabbits on the farm, it must be

admitted, do considerable damage if allowed to become numerous, but on a well conducted game preserve this is unnecessary and undesirable. Rabbits, *per se*, are looked down upon by the "big guns" in the shooting world, but they are thought a good deal of by keepers, whose perquisite they generally are. If one wants to make money or pay expenses by them, it is easy enough to form a small warren, or to fence in a few scores of acres of wood, copse, &c., without having them widely dispersed, doing damage in all directions, not only against the tenants' crops, but the owner's hedgerows, banks and fields. But then it is said they are useful to feed the foxes, and if foxes get rabbits they will not seek after the birds. They will, however, though not so much as when there are few or no rabbits. It must be borne in mind, too, that the rabbit does not live on young corn alone, that one cannot catch young rabbits, which do most mischief, in snares, nor yet old ones in traps not set in rabbit runs, nor would it pay the farmer to be continually on the look out, or have some "duly authorised person" on the look out for him, to kill his share of the rabbits, to which he has a concurrent right. The preserver, notwithstanding the Ground Game Act, has the ground game in his own hands, and if he is wise he will, in his own interest, keep the rabbits — the hares are not worth talking about—within proper and desirable limits. A farm without a few rabbits would be a melancholy sight indeed, and the farmer would be the first to protest.

The duties of the game preserver, as far as regards rabbits, demand no specification. The same operations which are required to produce a head of winged game will conduce to

the security and consequent increase of rabbits, and if any particular number be necessary, full particulars will be found in the chapter on Rabbit Warrens. Where rabbits are fairly plentiful and are annually killed down to prevent undue increase, there is a killing season, commencing in October and lasting for about three months, during which they are netted, snared, trapped and sent to market. All this is fully treated of in "Practical Trapping."

CHAPTER XXIV.—THE WILD RABBIT.

Warrens: Their Organisation and Management.

THE subject of rabbit warrens has deservedly attracted much attention, and it may not be inadvisable, therefore, to enlarge upon it somewhat. To our thinking, every well organised sporting estate should comprise a warren for rabbits, provided circumstances of locality and surroundings permit, and this for reasons pecuniary and otherwise which are sufficiently obvious to those who give the matter a moment's thought.

That the ubiquitous coney is not to be despised as an article of food must be admitted; and when its remarkable fecundity and the ease with which it adapts itself to locality are considered, it becomes evident that its production might, with profit, be increased extensively. The idea of creating large rabbit warrens is by no means a latter-day one; for we find that about the end of the last century and the commencement of the present, the rural world, and no doubt the urban one to some extent as well, was devoting some attention to it, which resulted eventually in the formation and maintenance of considerable numbers of more or less exten-

sive warrens for various periods. They were for the most part very successful pecuniarily, although it was a rather uncertain kind of enterprise in which to embark, on account of the widely differing prices which the produce yielded at closely following intervals. The marketable produce, be it remarked, then consisted in the skins rather than the carcases. The trade in the carcases was neither so great nor generally so satisfactory, and the supply of rabbits became often so large as to more than equal the demand, while, even when this was not the case, the wholesale price obtainable was often so low as half-a-crown a dozen for prime wild rabbits. Hence it will be seen that it would be within the range of possibility to go too fast even nowadays, when things are much changed; over-production might easily spoil the market and weary the consumer—an error not easily repaired. It remains, however, under existing conditions, that the supply of rabbits could be greatly increased to the profit of the preserver.

The construction of a rabbit warren before being entered upon should receive due and careful consideration, not only in the matter of situation, but on many other points the importance of which will become evident as we proceed. In order to avoid falling into a capital error, we will endeavour to point out the forms of warren best suited respectively to particular local features.

There are various descriptions of warrens the maintenance of which, on certain defined plans, is associated with success. Of these, one is essentially natural in its character, as far as the life of the rabbits is concerned. Indeed, were it not that the range of its excursions is limited, and the

length of its days shortened, the rabbit lives under exactly similar conditions as it would were it permitted to "run wild." This class of warren may vary in extent from a small wood or copse to five or six hundred acres, and may have all the prominent features of a farm, except the crops, which, it need scarcely be mentioned, would stand a poor chance were agriculture and rabbit rearing attempted simultaneously. We have over and over again seen estates of such a nature, rough and unserviceable, which would make most excellent warrens—estates on which copse and wood, common and broken moor, alternated with unproductive fields and sterile meadows in most excellent irregularity—that is, for the purpose of which we speak—but for farms were of no worth at all. Such as these are the very places where a large warren could be organised with every prospect of success, and with but little outlay. No one but those who know can conceive how quickly rabbits will increase, and adapt themselves to such a place; nor would anyone imagine the number which could in a year or two find good shelter and satisfactory existence upon land apparently incapable of supporting a score or two of sheep. One proviso, however, is that there must be a fair proportion of plantation or copse, with a thick substantial undergrowth. An estate of this nature would in winter become almost a wilderness—a weather-beaten, desolate expanse—and such being the case, good shelter at that time for the breeding stock and in spring for the young would be obligatory, notwithstanding heavy extra feeding and the frequent bestowal of comforts. Warmth is life to rabbits in winter, and although one finds many a skinny, almost skeleton-like

rabbit in January, so long as it has a warm nook to retreat to, it will manage to keep body and soul together. Hence the necessity of shelter, in one form or another. Furthermore, the soil, situation, and general character of the proposed warren must be suitable; but of these matters we will speak presently.

The pasture upon a warren-farm of the nature described would be very suitable to the taste of rabbits, being succulent, but by no means rank; while, curiously enough, the droppings of rabbits seem to lend most vitality as a fertiliser to those smaller and finer kinds of herbage which rabbits under the circumstances seem to prefer. One rarely finds that coarse, rank, quick-growing herbage is suited to this rodent's taste, and consequently a soil which produces natural herbage having these characteristics should not be chosen. Besides grass, the stock would doubtless require—the less frequently the better—additional food, chiefly of a root nature, although fodder, consisting of green food, such as clover, vetches, &c., will also occasionally become necessary. Such food might be raised within the precincts of the warren, which should be quite possible in one of fair size, say 150 to 200 acres in extent, in which case a certain sufficiency of land should be effectively fenced off and rendered impassable to the rabbits. It will be principally in the breeding season proper that additional food will be necessary; that is to say, in the early spring, when the first and most important addition to the stock is made; for at this time the tender and succulent young grass is not so forward in growth as to provide a sufficiency of good food, not only to the more than ordinarily ravenous does, but to their daily maturing off-

spring, which should be appearing in almost countless profusion, possessed with uncompromising appetites. The fodder to be raised at this time in addition to the pasturage may take the form of early vetches, clover, oats, or the like, as may appear least expensive. Generally there is an odd lot of swedes, carrots, kohl-rabi, &c., of inferior quality, "left over," which may be purchased cheaply; this is very nourishing to the does, and consequently beneficial to the young, which must on no account be stunted at an early age, otherwise smallness of size and susceptibility to disease will appear, and a deterioration of the stock ensue. It may be remarked that this extra feeding in spring is by no means always obligatory; it is to be regarded as an exceptional want which must not be overlooked when the occasion arises.

In winter, however, most rabbit warrens require no inconsiderable amount of extra food, more particularly when heavily stocked, where the killing has not been done before the close of autumn, and in what may be termed warrens proper, in contradistinction to those we have briefly sketched, where the land is for the most part of no other value, and in which the rabbits lead a partly artificial life. Natural warrens will invariably possess some coverts offering shelter with a sufficiency of food in winter, and they should supply grass and other food sufficient for two or three times the number likely to remain after the killing season. Similarly, in spring, in the case of these warrens, the land would indeed be poor if it did not produce the necessary pasture for the comparatively small quantity of stock it would then have to carry.

Two different sorts of food may be necessary, one for

winter feeding, to consist of roots, such as turnips, carrots, &c., and vegetables which will to some extent stand frost; the other for early spring feeding, comprising such vegetables and green food as will supply the want of a good growth of grass. Under the former head we have mentioned turnips and carrots; we may add parsnips, Jerusalem artichokes (a most easily grown and first-rate food), kohl rabi, potatoes, mangolds (a vegetable rabbits will eat, but do not relish much; it is, however, a good winter means of subsistence for them). The largest and coarsest kinds of cow cabbage are easily grown and as easily kept, but must not be given when badly frozen. These and such other vegetables as may suggest themselves to the experienced are all very suitable, and all easy of cultivation. There is, therefore, a large choice of food wherewith to stave off starvation during the severities of winter.

In early spring the provision that may have to be made requires more care, both as regards the description and the manner and quantity in which it should be administered, for there is some risk both to the does and their offspring in supplying an abundance of food following upon a time of scarcity. The spring is the period when rabbits are most prone to suffer from scarcity—more than in winter, when they have previously got into good condition. Consequently, a sudden abundance is liable to render them, if not unhealthy from over-feeding, at least expectant of its continuance, and neglectful of the grass and other herbage that may be obtainable. Tares, lucerne, comfrey, or green oats, winter sown, will be found most serviceable, and at the same time profitable to grow.

With reference to dry foods, little need be said. It is to be noticed, however, that to bring corn upon a rabbit warren is a very unwise course, for whatever may be the value of cereals as food for tame rabbits, they are of very little use for wild ones. Corn in sufficient quantities to sustain the numerous and daily increasing stock would cost as much as the whole was worth, while in quantities insufficient it would be simply money thrown away. Hay is frequently of use, and on a natural warren might be grown in plenty for the purpose, while other descriptions of dry food might include peas or beans, and the like, in small lots, at intervals of some length, as may appear necessary to counteract extremes of season. Before leaving the consideration of extra or artificial food on natural rabbit warrens, we would impress upon those contemplating an enterprise of the kind the care necessary when deciding upon the site, that extra food may not become a large and increasing item in the expenses, instead of an occasional one.

The presence of innumerable rabbits on a natural warren is not so conducive to the fruitfulness of the soil, by reason of the manuring it receives, as to yearly improve the ground. Though rabbit droppings are no mean fertilisers, still the very abundance of such aid may produce a contrary effect, culminating in that condition known as "sour," so that not only will new pasturage not grow, but that the old dies away or becomes rank, and the rabbits refuse to consume it. To prevent this is by no means difficult; on a natural warren the land may be easily renovated. A good heavy chain-harrow with fangs of some length at the joints, drawn carefully over the grass in two or three transverse directions,

will knock it about sufficiently well; if not, a light harrow must be employed, and the land rolled subsequently; while, when necessary, grass seed should be sown, in quantity sufficient to put fresh life into the pasture. Land which will not maintain its freshness, and give no sign of becoming sour year after year without more elaborate treatment than this, is certainly not worth much for the purpose.

In the chapter on the Natural History of Rabbits, it will be seen what particular features of land are most conducive to the comfort of the stock, and, consequently, to their health and increase; obviously, the more one can increase and foster such characteristics the more beneficial to a natural warren. On such warrens as require the establishment of covert in any great quantities, one must look to the description of what exists already, or on neighbouring lands; for certainly that kind will be most easily produced. For planting any large acreage, or odd corners about the estate, the best, and probably least expensive plan, is to sow with grass or broom, while old bramble roots, taken from beneath, and adjacent to hedges, will quickly take root if roughly planted. Rabbits are sometimes peculiar in their preferences for particular localities; and it will occasionally be found that while one portion of a warren has become almost entirely overrun, the remainder is nearly neglected. To obviate this various means may be taken to induce the rabbits to burrow in the neglected parts, the most efficacious being to produce a spot particularly suited to their tastes. The simplest mode is to make a collection of old tree roots, stumps of wood, and dead fir branches. Having piled these together in indiscriminate confusion, but not above two or

three feet high, cart sand or gravelly soil and heap it over the mass till it is nearly covered, and in a very short time rabbits will begin to work into it; if not, make one or two artificial burrows, and about these confine within wire a few couples of the stock, and supply a sufficiency of tempting food. After a while they will become reconciled, and commence the formation of what in time will become a large colony, capable of thickly stocking all neighbouring hedge-rows and other eligible sites.

We now pass to the consideration of that class of warren which we term artificial, for the reason that they are for the most part dependent for their specific character upon artificial means. Artificial warrens resemble very nearly enormous rabbitries, but differ in being entirely of an open-air description, while the others are for the most part provided with a certain amount of cover. Almost any kind of situation or soil is admissible, provided, firstly, that it be not absolutely unfertile, and secondly, that it be situated in a position to warrant its soil being dry and free from surface water from one year to another without intermission. Nor is any description of ground unsuitable if it produce an abundance of suitable herbage, and any expanse of common or the like, of sufficient size, is quite adapted to the purpose. As an example we may mention those tracts of broken land which are so common on many portions of our coasts, chiefly composed of sand and light soil which formerly received its uneven character from being blown into alternate hillocks and depressions before any vegetation appeared to constrain its movements. Such lands as these, where they are sufficiently uneven to be unadapted to aught but

pasturage, will mostly be found fairly supplied with rabbits on the greater portion of their extent. Indeed, so evident is their suitability, that many are already being turned to good account for the purpose we suggest.

If the ground selected be of rather a hillocky character, so much the better, for then the rabbits will soon adapt themselves to the circumstances, and begin burrowing in good earnest; but if, on the other hand, this is not so, and it is necessary to produce the inequalities required, it is essential that the work be accomplished in a complete and satisfactory manner. The mere throwing up of mounds of earth and a corresponding formation of depressions, apparently the most efficacious receptacles for rain water, is not satisfactory. First of all, the slope of the ground at the highest point or points of the proposed warren must be ascertained, and, this done, the directions in which the ridges of earth should run which it is necessary to construct must be determined upon and marked out, and they must be raised parallel with the slope which the ground takes, so that rain, instead of running down and soaking into the burrows, may find its course between the rows. These banks of earth should be permanently from three to four feet high, about two feet wide at the top; and, in order that their formation may be as compact and satisfactory as possible, it is advisable, according to the nature of the soil, to extend or diminish their distance from one another, say from 12ft. to 15ft. Their formation should be commenced by cutting a trench about 18in. to 2ft. deep the whole length of the ridge intended to be raised, and the soil removed from about three-fourths the depth of the trench,

sloping up to the surface, where the bank rises up. This will provide a sufficient and quickly obtained material for the hedgerows, if we may so term them, and at the same time prove an efficient mode of keeping the burrows free of moisture. At intervals of from seven to ten yards there should be a partial or entire break in the ridge; while, if there be stone easily obtainable, transverse partitions or partings should be built in, with a view to the prevention of too long tunnellings. Further, in order to render the burrows as compact and systematic as possible, two—or three, according to the length of first-formed banks—long ridges of earth must be formed, at right angles, or such angle as the situation requires, to the former; and, if considered advisable, two larger banks may be raised extending from the one situated right at the rear, one from each extremity, to the whole length of the last formed burrows. Such a collection of burrows as the above arrangement would give is best situated at one end or corner of the area of land obtained for the warren, and may be supplemented, if thought advisable, by a range of burrows formed in a large bank of earth running right round the warren ground; while if still further situations for burrows are desired, the series of banks may be duplicated or triplicated. Just as in every poultry yard there are a few contrary-natured hens that prefer to lay astray, so in every warren there will be found self-relying coneys which prefer to seek out a site in which to burrow their own dwellings, all inducement to abstain from doing so notwithstanding; and it will be advisable, perhaps, to foster rather than attempt to overcome this temper, providing the means of grati-

fication, without offering too great inducements to quit the banks.

Rabbits on artificial warrens cannot be left without covert of some sort in addition to their burrows, and it will therefore be necessary to sow gorse seed here and there, and adopt such other means as may quickly afford the requisite shelter. Besides planting for covert, there are other means which may be adopted temporarily; a collection of old tree roots in a particular spot, or a quantity of large faggots placed on end, so as to allow of multifarious interstices. We should, however, prefer something more permanent, and where laurel, hazel, beech, willow, thorn, and small firm saplings can be obtained in sufficient quantity and cheaply, the best plan is the formation of a belt of covert about four or five yards in width the whole way, or a great portion of the way round the warren, commencing at the extremity or corner where the primary burrows are situated. This is best effected by planting the above-named saplings fairly wide apart, in no order, and then sowing broom or gorse seed, or both of these, in between. Small patches of covert may then be similarly formed at such parts of the warren as may seem advisable.

The construction of ridges of earth wherein the rabbits may form their ramifications is, on such soils as are of a loose sandy nature, by no means necessary, as the rabbits will burrow in any spot, and taking kindly to their dwellings, will remain perfectly healthy in them. The only eventuality to be avoided is that of the ground becoming so honeycombed as to be deprived of all moisture, and thus the

grass be destroyed. Some sandy soils are very thin, and often lie upon a foundation unsuitable or distasteful to rabbits, and consequently the burrows are only formed to the depth of the sand; it will therefore be necessary under such conditions to confine the ramifications to prescribed limits of ground. The same holds good, also, to some extent with old burrows, which, according to our experience, are best confined to certain ends or corners of the warren, the rabbits, in that case, being obliged to advance further out as their demand for food increases. It will always be found that rabbits which are compelled to move some distance out from their burrows to feed will be in better all-round condition than those with a superfluity of provender within easy reach.

We now come to the question, what description of land is best suited to the establishment of large quantities of rabbits upon it, and whether all kinds of soil are applicable to the purpose? There is no soil, except clay or soil of a clayey nature, which is not capable of being employed for rabbit warrens; but there are undoubtedly many soils which are to be preferred to others. In general, however, land of a sandy or gravelly nature is as good as can be desired. When we say sandy soil, we do not mean sand pure and simple, such as is only capable of producing here and there a few blades of rank, useless grass—far from it; we allude to one of similar nature to that which has half-formed granite for its foundation, such as exists in great part throughout Scotland and many other mountainous or hilly districts. Red soil lying upon the red sandstone is suitable; chalk will also do, provided it bears grass in

sufficient and permanent quantities. Another proviso, which should not be overlooked, is that on no account should land of a damp, moisture-retaining nature be chosen; the land must, above all things, be dry, and thoroughly so. A soil which becomes saturated with the rain that falls upon it, and retains it, instead of allowing it to permeate through to the rock surface, becomes in damp weather almost like a sponge full of water, and in hot weather as humid as possible, the immediate result of both or either being an outbreak of disease rapidly fatal to the numerous stock. Epidemics in rabbit warrens may nine times out of ten be traced to this cause; hence the necessity of taking full cognisance of the land proposed before commencing operations upon it. As we said, clay or clayey soils are unsuitable; and, to our thinking, any attempt to utilise them would result in disheartening loss.

Having decided upon the soil, the next question is the situation best adapted for a warren, its aspect, and other minor considerations. The most desirable situation is upon a hill, the top of which slopes slightly to one side, and then dips suddenly down into the valley. No better site could be obtained, provided there be shelter in the direction from which the roughest weather comes. Such a situation is sure to be well drained naturally, and is moreover exceedingly suitable in every other respect. The burrows would in such a case be most judiciously placed upon the expanse of the greater slope, which in time would become one mass of holts, while the upper portion would form the feeding grounds. The land should face the south, or as near thereto as may be, while the whole expanse of the warren should be entirely

within the view when regarded from the south-west. Extensive warrens, however, of from 200 to 500 acres cannot be obtained having all these characteristics, and they may be deemed quite satisfactory if they are of sharply rising tendency, and have their highest point in the centre or at one side. Small warrens are expected to carry a larger percentage of rabbits than large ones; and one can obtain characteristics which may be regarded as desirable in connection with warrens of from 50 to 200 acres.

Whichever the description of warren, it will be necessary to provide effectual means for confining the rabbits within the limits of the domain they are intended to people. On natural warrens, where there is or should be always abundance of covert and food, the task of limiting the radius is easy enough, for in most instances they will be quite satisfied to remain voluntarily within the prescribed bounds. Natural rabbit warrens will, however, for the most part, be surrounded by a ring fence, or at least by a succession of hedgerows and banks equally effective; and it will only be necesssary, therefore, to discourage the formation of any ramifications in these, or closely adjacent. If, however, the self-willed rodents persist in attempting to pass the prescribed limits, the constant stopping of their holes, and the continual presence of a certain number of traps and snares at intervals, will have a salutary effect. Notwithstanding all this, it may happen that without the limit of the warren enticements are presented which make the coneys pass in considerable numbers what should be the limits of their happy feeding ground. In such case fencing becomes necessary, and moreover of a kind which is quite impassable.

This will probably take the form of wire netting, which is also the only cheap and effective means of confining the stock of artificial warrens. The best and most suitable size is the 4ft. wide, 2in. or 2½in. mesh, and, in order that it may be made impassable, it must be fixed in the following manner: At every 6ft. to 9ft., stakes of from 4ft. to 5ft. in length must be driven in until 3ft. of their length remains above the ground. Then on the inside of what will be the fence, a trench must be cut along from stake to stake, about one foot wide and three or four inches deep; it will suffice if nothing more than a good thick "skad" be removed. This accomplished, the netting must be fixed to the post by staples and tying with wire, commencing at the top. At the bottom of the trench the last staple should be driven, and the surplus length of netting turned and laid flat in the hollow formed, when, having been pegged down at the necessary intervals between the stakes, the turf removed must be replaced upon the wire, and firmly beaten down. This is the only mode of fixing wire netting which completely baulks the rabbits and prevents them working under. Occasionally one may perchance burrow under, but very rarely; but should this happen, then catch and kill the offender. Not only is the wire when so placed proof against rabbits, but it stands up better and bears a greater strain. When employing this as a limit within the ring fence of a natural warren, it is advisable to fix it about two yards off from the hedgerows, banks, &c., upon the inner side. As to the question whether a permanent wall, either of stone or brick, or a wooden fence would be desirable, opinions would not differ, but whether the erection would be worth the capital

expended we must leave would-be warren proprietors to decide for themselves. One thing a wire fence is capable of, namely, being stepped over, and it therefore behoves the owner of the establishment it surrounds to be careful that none but those who have a right to do so should pass this limit. There is no more easy thing to poach than a rabbit, and no place where it is more easily done many times than on a rabbit warren; so that due vigilance must be observed to prevent or be present at the visits of the light-footed, light-fingered gentry, who occasionally make free with warren rabbits.

And this brings us to the question of labour; for a warren cannot be worked without warreners. On every establishment of this kind there should be a certain number of resident warreners, or keepers, whose duty it should be to foster the stock in every possible way; to protect the warren from poachers and thieves, and generally to look after the place. The number of acres each man can manage depends upon the locality and character of the warren. In some instances the permanent men need not be more than one to every five hundred acres; in others, a fifth of this quantity of land is all that one may be able satisfactorily to deal with. Then, again on such warrens as require extra artificial food, a labourer will be frequently required. At killing time, also, extra hands will be indispensable, and no doubt easily obtained; for this business comes to the fore when other work is getting slack in rural occupations, and there will be found plenty of cheaply-obtained men only too delighted to get a few months' work on a warren at catching time.

As to the means employed to effect the capture of the stock, we may with advantage say a few words. They consist invariably of either or all of the following: trapping, snaring, netting those bolted by ferrets, and another mode, of netting of a more extensive kind, into a description of which we shall enter presently. As to the first three modes, we need say no more than that the uninitiated may find full descriptions as to the various processes in "Practical Trapping;" we may add that an effective and cheap trap has at length been invented, which, for most purposes, is quite applicable, and is, moreover, quite humane, as it kills the rabbit caught outright.*

When netting is used as a means of taking large quantities of rabbits, considerable discretion is required. The first requisite is a large net of about fifty yards long by three to four feet wide. This is rolled up or collected at one side of one of the extensive rows of burrows of an artificial warren. The rabbits which tenant them are then allowed to leave their burrows and to feed out to some distance. This invariably takes place between sunset and sunrise. As soon as the coneys are sufficiently distant the net is extended and held partly suspended in front of the foremost holes, in such manner that a foot or two of its folds lie upon the ground. Some persons then proceed to such portion of the warren as may be deemed advisable, and drive the rabbits in the direction of the net into which they unwittingly run and have not the sagacity to retire from. Others meanwhile proceed to catch and kill all those entangled.

* Messrs. Bayliss, Jones and Bayliss, Queen Victoria-street, London, are the manufacturers. They call it the Douglass Trap.

Sometimes, on nights when the rabbits are "well out," enough are caught for the week's supply. At others, two or three such drives are made every night in order to obtain the required number.

The rabbits before being sent to market are paunched, and such paunching will produce an amount of offal of some value, which may be disposed of to some neighbouring farmer and utilised as manure. On natural warrens this offal can be employed for the same purpose, to renovate any portion which may require so treating.

The rabbits are usually disposed of in their skins, but sometimes without. When this is the case, the skins are usually sold separately by weight. The disposal of the season's "kill" is of course a very important matter, consequently one must bear it in mind when commencing a warren. Proximity to a railway station is desirable but not necessary, but a station from which to send the rabbits should if possible be on the main line, for the avoidance of delay in transit. The disposal may be to the retailer by a contract; but it may be remarked that there are middlemen enough when rabbits are being sold from warrens. That the demand for wild rabbits will always be large we have no doubt; that it will increase is equally certain, more especially as they are a cheap, nutritious, and lasting food, which should become a common comestible amongst the humbler classes, instead of being regarded as a luxury as they generally are.

CHAPTER XXV.—THE SILVER-GREY RABBIT.

Breeding in Warrens.

THIS species has attracted considerable attention of late as a medium of rabbit raising which promises both sport and profit. That it is possible to substitute the silver-grey for the wild rabbit is certain ; for not only has it been tried, but the results have been eminently successful. The breed known to fanciers as the silver-grey, and to warreners and game-keepers as a blue rabbit, is a variety of the common species. At its birth it is invariably wholly black, but after six months, it has generally attained the colour which originates its name. The fur is remarkable for its beauty and also for certain peculiarities, as it is composed of three lengths of different hues ; the outermost, or longest hairs, should, we believe, in a correct specimen be white with black tips, but it is very often entirely of one or the other colour, producing a consequent variation in the actual shade which the fur appears to be to the eye. The second, or middle, length of hair is of slate-colour, and is visible on the surface of the animal's coat ; furthermore, it varies so little in shade

that the deviation is quite unnoticed. The innermost and shortest hair is of a brownish light blue, and is only viewed when one blows into the fur and discovers the skin. In length, the fur is about the same as that of the wild rabbit, but of very fine texture, feeling very soft and glossy to the hand.

Of course, when seeking to introduce this breed in a warren, some limit less than that of the place must be put on their peregrinations, else they would quickly become dispersed over the whole extent of ground, and the result would be very uncertain. The most advisable plan would be to inclose about five acres of good ground, that would be sheltered, dry, and in all respects well suited to the tastes of ordinary coneys. Into the inclosure the quantity of those turned down should be placed at intervals. That is to say, if one intends dispersing some hundred silver-greys, the plan which would most obviously commend itself would be to turn away one-fourth, and see how they accommodate themselves to their new style of life, and to the particular locality chosen for their first acquaintance with a wild existence. If they seem contented and take to their condition satisfactorily, it is well. After about a fortnight an addition of the remainder may be made, and as soon as the whole appear to be at home, the restrictions upon their movements may be withdrawn, when they will soon spread out, mingle with the wild members of their tribe, and in a very short time be making their existence felt by numerous additions of future blue rabbits.

If the ground be not very productive, it may not be unadvisable to provide them at first with a little extra food, in

the shape of cabbage, lettuce, &c., which may be discontinued as soon as the restrictions on their movements are removed, when hunger will show the whereabouts of a greater abundance than they are able to obtain in the neighbourhood of their burrows or forms.

If the ground available be extensive, it would not be at all unpractical to utilise the fencing several times over at different parts of the proposed warren, and so divide the silver-greys turned down amongst various portions of the place; when, one part being unfavourable, the others run a chance of being more suited, particularly if the various spots chosen offer opposite characteristics of soil and covert. Of course wire netting is the only kind of fence applicable, and certainly could not be improved on. As to cost and quality we cannot do better than recommend application to some of the well-known firms for quotations and samples of such as were mentioned in the foregoing chapter as the most suitable.

How to obtain a sufficiency of silver-grey rabbits is a question not easy to answer in a satisfactory manner; for, although there are, no doubt, hundreds obtainable, the price asked would be ruinous, as they are unmistakably a fancy rabbit, and fanciers value their live stock pretty highly. We should think, however, the best way would be to advertise for a supply, making the proviso that they be silver-grey rabbits and nothing more, endeavouring to obtain, if possible, an equal number of bucks and does. We would resolutely reject any but healthy, good-looking, young specimens, all the claptrap as to the superiority of worn-out, diseased old ones, to the contrary. The price would range, we should

think, between 2s. and 3s. apiece. If, owing to costliness, the number obtained be too small to effect any marked result among the wild rabbits when turned down, other means may be taken to secure a sufficiency. There may, however, be warrens of silver-greys already existing, and, no doubt, by a little inquiry, one could obtain a good quantity. In any case, breeding could be resorted to the first one or two years; and as the silver-grey is nearly as prolific in confinement as the "real old sort" in its unrestricted state, the process would be expeditious and inexpensive.

As to the market there may be for the skins of "blue" rabbits, we believe the price varies from three to six times that of common wild rabbits. There are special demands for silver-grey rabbit skins, and communication with the consumers through some trade journal would secure a good price.

It may be remarked that silver-greys, when turned down into rabbit warrens, eventually degenerate into what are termed "millers," the longest of the hairs being uniformly black, while the colour of the fur acquires a sort of half-and-half hue, neither grey nor blue, but partaking more of dirty slate colour. At other times, but less frequently, the white of the outer hair takes an entirely white hue, and the result is a "mealy." The name sufficiently indicates the colour of the fur. The cause of deterioration of the rabbits' coat is obviously in-and-in breeding, which has to be carefully avoided if one would maintain the character of the newly-introduced stock; and in order to prevent the occurrence of any such untoward result, a fresh load must be introduced about every two years. One curious fact about silver-greys

is that nine times out of ten a cross between a wild rabbit and a silver-grey results in silver-grey produce, and that these latter exercise as marked an influence on subsequent production. As a wild rabbit, the silver-grey so-called loses its most marked hue, namely, the silvery sheen, to a considerable extent, and becomes nearer to what warreners call the "blue" colour. The fineness of the fur and its other notable characteristics remain unimpaired.

CHAPTER XXVI.—FERRETS.

MANAGEMENT—BREEDING—WORKING—DISEASES.

THE tending of ferrets, their training and working, are usually considered the duty of the gamekeeper. Circumstances and inclination may, however, induce one to take up their management; and, indeed, they are by no means unworthy the attention of the amateur preserver.

The ferret, it may be remarked, is incapable of existing in a wild state in this country. Although it has acclimatised itself in several of the more southern of European countries, its original habitat is held to be Africa. Consequently, the conditions under which we are able to rear it are essentially artificial. Anyone who is acquainted with the habits of the Mustelidæ—of which family the ferret is a prominent member—is aware how nice these animals are in the arrangement of their dwellings and the care of their bodies. The first fact, then, which suggests itself to the ferret keeper is that cleanliness and a reasonable amount of warmth are two of the conditions most favourable to healthiness of his stock. Ferrets are kept in various numbers, according to special requirements; thus, in rabbit warrens sometimes

as many as fifty are retained, while occasionally one only or a couple may suffice for the requirements of those who "go out ferreting." For any number up to six, or thereabout, a hutch of some kind is necessary; and, although we are no friend of those who aver that "any sort of box will do," we are no less adverse to the many complicated descriptions of hutches often recommended. Those ferret boxes are too dark, too warm, and too small, while we may also add that they are invariably too seldom cleaned out. After a good

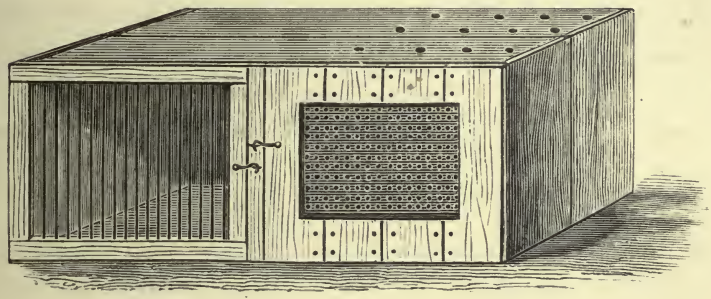


FIG. 11.—FERRET HUTCH.

deal of experience and attention, we have come to the conclusion that one or a series of boxes of the description to be presently given cannot be improved upon for, say, from one to twelve ferrets. We have tried many ways to get rid of damp and smell caused by the animals' excrement; but we find that nothing is preferable to regular and thorough cleaning out. It may be very well to put wire or perforated zinc beneath a hole cut in the bottom of the box; but the animals are not often considerate enough to catch the idea.

Each hutch (*vide* Fig. 11) must measure 3ft. long, 18in.

high, and 18in. deep, and be divided into two equal parts by wood as thick as that of the outside, provided with a round hole in the centre four inches from the bottom. This hole should be capable of being closed by a disc of wood, which, working on a screw, can be moved over or above it. The sleeping compartment, for preference on the right side, is provided with a door of wood, having a square hole equal to half its surface cut out and covered on the outside by a sheet of the finest perforated zinc. The centre dividing board projects to the level of this door, which fits in on one side, and is fastened by a small bolt. The top of the sleeping compartment has small holes bored through it, about three inches apart, and all over. The feeding compartment is closed by a door, consisting of a frame of wood, the side-pieces of which are 2in. in width. The aperture is covered by small rods of iron or stout wire, ¾in. apart, running from top to bottom. The top of the breeding compartment is in a single hutch bored through, in each of a series, covered in similar manner to the door of perforated zinc. The end or side is formed in the last fashion described. The bottom is entirely of wood.

The great disadvantage of most hutches is that the bottom and the portions of the sides adjacent become saturated with offensive moisture: and in order to prevent this the inside of the box must, on the bottom and sides, be either painted with three coats of impermeable paint, or treated in a corresponding manner with Portland cement and water, mixed to a consistency which allows of its being laid on with a paint brush. This is the only satisfactory preventive; for, although a bottom of wire or perforated zinc will allow of

the moisture draining off, the draught and the bad surface for the feet are most deleterious to the occupants.

One hutch of this kind will hold three ferrets comfortably, and allow of their enjoying health; so that for twelve ferrets either a series of boxes or three separate ones are wanted. We, however, always keep one spare box on hand; so that on cleaning days—twice or three times a week—the occupants of each box are removed, not into their neighbours', but the first lot into the spare box, where they remain till next cleaning day; the second lot into the first box, and so on. Each dwelling, therefore, gets a thorough airing, except when breeding is going on. For the purpose of cleaning, a small square of sheet iron, with a long handle attached to its centre, is the most useful and most effective tool we know of. In the sleeping compartments, the best litter is clean oat straw, mixed, if such be available, with some fine deal shavings. A change once a week is sufficient, if a tin of Keating's Insect Powder be kept at hand wherewith to sprinkle over the floor, as this keeps the litter sweet, and is very effectual in destroying any insects which may make their appearance on the ferrets themselves and on the sides of the hutch. The feeding compartment is sprinkled over with a little sawdust, or the like; there is, however, no necessity for any litter in this division. When fixing up the hutch we hang it against the wall at about 5ft. from the ground. The best way is by a thick cord from each end to large 9in. nails in the wall, as the box can then be disposed so that the bottom can be made to slope backwards, except when being cleaned out.

Where a large number of ferrets are kept, the employment

of hutches is only advisable for breeding purposes, and we consider the best ferret house to be a small paved court, covered in—indeed, for fifty ferrets or so, a small wooden shed, of the style of the portable tool houses now offered for sale. The court for, say, from twenty-five to fifty ferrets should consist of a floor bricked or tiled, and the sides be of wood about four feet high. The measurements are—length, 12ft.; width, 6ft. This must be divided by a partition throughout into equal portions. Three feet from the inner end of each division a portion is cut off by a foot high parting board made to slide up and down, and this part of the run is again divided into three parts in similar manner, by parting boards of 18in. high rounded off at the outside corner. The first division is provided with three round holes of 4in. diameter, allowing entrance into each of the sleeping compartments. Each side of the court is provided in similar way. By having the several divisions made so as to fit together, they are easily removed for cleaning. It will be seen that this court permits of the dogs being kept apart from the jills; besides, the division of the portion set apart for sleeping into three separate dens prevents disagreement. Of course, the jills, when with young or in heat, are removed to separate quarters for the time being, and a hutch or two is necessary for the purpose, as well as for special requirements, such as the separation of a sick ferret or the like.

The feeding of the stock is the next item which demands attention; and although most persons are agreed as to the general nature of the food, some difference exists as to the best time for feeding, particularly of those which are continually worked. The staple food should be bread and milk

made by pouring boiling water over dry stale bread, then squeezing off most of the water and adding a sufficiency of cold or warm milk to cover the bread. This diet may be added to, twice or three times a week, by dainties in the form of small birds, the livers of ground game, or portions of a rabbit. The raw necks and heads of fowls, also, are suitable. It is, however, necessary to avoid giving too much food, and the quantity should never vary from day to day. We should sometimes vary the bread and milk to porridge and milk made in a similar way. The chief point of difference among ferret keepers is, whether to half-feed, feed, or not feed their animals before using them to rabbits; and while paying every respect to the opinions of the experienced, we find that it is better and more satisfactory, both to the ferrets and to those who use them, to feed always the same, work or no work. If unfed they are too blood-thirsty; if half-fed they are tired out in a very short time; while if no change of routine is made, we find the ferrets invariably bend to their work in a steady painstaking style. If a ferret be worked throughout a whole day, it is quite advisable, ofttimes necessary to give it a rest, and something to feed on about the middle of the day; it enlivens the ferret and sustains it.

The breeding of ferrets is one of those undertakings in which a little practice is worth a great deal of precept. We fancy more failures result from over-attention than from want of care, and more especially is this the case with those whose experience has been with but two or three broods. The most critical part of a young ferret's life is the month after it is first able to see; consequently the greatest care should be exercised during those four weeks.

Ferrets usually breed twice a year, but we have known them do so three times and show a disposition to multiply their species even more often. The jills come in heat generally about April, and by the month of September the young are ready to work. If bred later in the year, they are only half-size by the time when most wanted, and are in every way more trouble than they are worth. The period of gestation is about six weeks, and the jill may be worked up to within about a fortnight of her time if necessary, and, in any case, should be allowed exercise and plenty of good food. Nothing is more prejudicial than starving the dam during gestation, as it weakens her, and exerts an evil influence on her progeny. When five weeks of her time are up, she should be placed in a clean, warm box alone; plenty of clean, sweet litter—oat straw is far preferable—must be given, and the sleeping compartment not opened for at least three weeks, when, while the dam is feeding, an investigation of the young may be made, the number and quality ascertained, and a fresh supply of litter provided. Meanwhile, there need be no cessation of the bi-weekly cleaning out of the feeding compartment; but this should be done immediately the jill has finished feeding in the morning, when as soon as she enters the nest the aperture in the division must be closed. When ferrets have young, they must be fed twice a day, the morning feed to consist of warm bread and milk, and a portion of flesh of some sort—for instance, a rabbit's liver. When the dam has re-entered her nest and is quiet, the remains of the meal should be removed, and a small tin of milk put in, in case she might want anything before the evening

meal of bread and milk. However, if the jill carries meat into her nest, forbear giving it, or at least prevent her taking it into the sleeping compartment.

When the young are six weeks old they begin to see and get about a little; and at two months will probably find their way out at feeding time and be able to take their due share. This is the time when they are liable to distemper, the "sweating ill," or "the sweat," which often plays havoc with them. When about two months and a half old, they must be removed from the dam into a separate hutch, and kept there alone for a fortnight or so, when they may be turned away in the court, if one be provided, or else separated into batches and deposited in the hutches. During the time they are together, waiting for the possible outbreak of the sweating sickness, they require feeding three or four times a day on bread and milk alone, and should be kept scrupulously clean. If any show signs of weakness, they should be separated, as it invariably occurs that "sweat" first shows itself on a weakly member of the brood.

The principles of ferret breeding are not very complex; but at the same time, if a healthy strain be desired, they must not be ignored. For rabbits and rats, we maintain, ferrets of equal size are desirable; the idea of breeding large ones for the former quarry, and small ones for the latter, is mistaken. We always find large, lumbering ferrets bad workers; and diminutive specimens invariably show, when fairly worked, that though the spirit is willing the flesh is weak. Medium-sized animals, whether white, polecat, or cross-bred ferrets, are the best in every way. Never breed from bad workers, nor from sickly ones. When

commencing a strain, choose young, healthy, hardy parents, and equally well-constituted progeny will be the result. In appearance a ferret should exemplify the type of the Mustelidæ proper, not of the moles. A sharp-pointed muzzle and lithe muscular body, well set on sturdy legs, are the chief points of a good ferret.

The early training of ferrets is, to our thinking, not sufficiently practised, and it would be a saving of time and trouble if something more than the natural instinct of the animal were depended on to teach it its work. When young ferrets are handled properly from the beginning, they never become shy at the holes, except some misadventure occurs such as the bite of an unruly dog. The earlier you commence to handle them the better, and at three months old it should be made a daily practice to take out the young ones from the hutch and accustom them to being picked up from the ground and transferred from hand to hand. At feeding time we always repeat the same call, and in course of time they learn to answer it. As has often been said, to snatch at ferrets in a timid way is most likely to cause them to come to hand with reluctance, and to endeavour to get their teeth into the hand that seizes them.

When they have become throughly tame to the catch, they may be taken out to some well-known small burrow, where a rabbit or two is known to be. The old jill, which presumably is a good worker, must be turned in, and a young one with her. It is best to put nets over the holes, so that when the rabbit bolts it may be kept, and having been killed, the young ferret should be allowed half a

minute's worry, and then taken off. When half a dozen repetitions of this process have been gone through, the youngster may be considered initiated into a good share of the mysteries of rabbiting.

It may seem superfluous to attempt to give any information on the working of ferrets, as everyone who keeps these animals will probably consider himself acquainted with the mode of procedure. However, there are one or two points upon which it may be useful to speak. In the matter of muzzling, or rather, in technical parlance, in "coping," a good deal of divergence of opinion exists. We have always found, however, when ferrets can be relied on, that any form of coping is superfluous, but that with some particularly active ones, which have a bad habit of running into their rabbit before it has a chance of moving, the controlling influence of a cope over their very ready mouths is beneficial. But where possible we eschew a muzzle; if, however, one is needed, then we always adopt the simplest form of coping possible. For this purpose whipcord, unravelled into its three strands, is the best tying material. Take a length of about 12in., and form a simple loop in the centre, and, while someone holds the ferret and opens its mouth by pressure in a backward direction on the top and beneath its head, place the loop behind the first canine teeth of each lower jaw, and draw the loop beneath tight enough to be sure of remaining in its place, then bring the two ends and tie them in a reefer's knot above the muzzle. Measure back the strings together, and at a distance in a line with the back of the skull tie them again, when, having passed them downward on each side, they can be tied sufficiently tight to

prevent slipping beneath the throat. This mode of coping is the best and surest, and, after a few trials, it may be put on so effectually that it will remain all day, although not tied by any means tight enough to inconvenience the animal in its work.

The leather muzzles and collars sold for ferrets are worse than useless. Of bells we have much the same opinion. The only time a bell may be useful—though it seldom is—is when a ferret lies up in a hedgerow, as occasionally the tinkling may guide one to the right spot whereat to commence its excavation. Of working ferrets with a line, whatever be the soil, we have an equally poor opinion, as not only is it prejudicial to speedy bolting of the rabbits, but the fact of the ferret tugging along a heavy weight of string, often multiplied by the irregular formation of the burrow, is simply handicapping it against the rabbit, and retarding its movements.

"Lying-up" is the bugbear of ferreting. Its mention reminds one of wearisome hours of waiting by the hedge-side and in the warren for the ferret which does not show itself, and the rabbit which will not bolt. Many have "wrinkles" which will bring out a ferret "like a shot"—if the ferret thinks proper to be brought out—but, apart from the many expedients often tried, we may mention a little preparation which has often gladdened the hearts of those who, like ourselves, have tried it on a lying-up ferret. Obtain some thick, rough brown paper, or, if possible, some of that grey paper toy shops invariably have a good supply of, and cut it in lengths of about 1ft. by 2in. wide. Then mix together and pound in a mortar some saltpetre, in the proportion of twelve parts

of the nitre to one of cayenne pepper, and make as strong a solution of it as possible. Lay two strips on a board, paint them well with the solution, fold the treated sides together, and, having painted one side of another, repeat the process until about six are all thoroughly saturated on both sides, when the whole may be dried, rolled up, and put away for use; keep it in a tin box. To use, take one slip, roll it up, and, having placed it well in on the windward side of the burrow where the ferret lies, set it alight, close the mouth of the hole with a scad of turf, and wait the result; if the ferret is where the fumes can reach, it will come out with singular promptitude.

Another wrinkle is worthy of mention in connection with ferrets lying up. When they get on to a rabbit in a burrow, it is often necessary to dig them out, but this is not so much the difficulty as to discover their exact whereabouts. A great aid for this purpose is a well wrought iron rod—or steel, if it can be had—about five feet or six feet long, and pointed at one end. If this be struck sharply into the ground and the ear placed close to the end, if it be at all near the ferret and rabbit, it will distinctly convey the sound of the former scratching and working. With a little manœuvring and experience in its use, one can hit the whereabouts of the truant animals, and by merely digging downwards both ferrets and rabbits are secured, all the worry and labour of digging as the hole leads being done away with.

The diseases of ferrets are not numerous, but they are severe and virulent. Moreover, they are very contagious, and an outbreak invariably extends throughout the whole

stock, and often plays great havoc. The most fatal and pernicious are those which result in the main from negligence of ordinary precautions and want of care in general management. Ferret-keepers, whether gamekeepers or amateur preservers, are rarely acquainted with the nature of the diseases they seek to treat, or the causes of the outbreak; consequently the remedies employed are either useless or pernicious. The chief diseases of ferrets are distemper, foot-rot, and scab; their accidents, scratches or bites from rabbits or rats; while they often suffer from lice on the surface of their bodies and from worms within.

All ferrets suffer at some time in their early life from distemper, or (as it is also called) sweat, and the sweating sickness. This malady generally appears about the time when the young first obtain sight, and in its milder form is by no means serious, as a change of hutch and food, together with a little extra cleanliness, soon brings the youngsters right again. This form of disease is often stated to be quite distinct from the distemper; but we venture to claim correctness for our view, and submit that distemper is plainly an aggravated form of this particular malady, resulting from defect of cleanliness and ventilation in the hutches, and want of healthy, proper food.

The symptoms of sweat are, in the first instance, general heaviness and dullness. The animal declines its food, and lies all day shivering in its nest, although when handled and examined it will be found to be sweating profusely. The eyes are dull and half closed, while these and the nostrils both give out an offensive discharge. A dirty, badly-ventilated hutch aggravates the distress. The head

swells, especially about the eyes and lips, while the former quickly become closed with the discharge. The body shows signs of distress, and the animal becomes prostrate.

For the first and mild stage of the malady, removal to fresh, clean, well-ventilated, but warm quarters, is desirable, and the ferret should be washed in luke-warm soap and water, in which a little Condy's Fluid has been added. Then having been thoroughly dried and wrapped in flannel, it should be placed in its nest. In about one or two hours some warm milk, subsequent to a dose of five to ten drops of cod-liver oil, should be given, and by next day it will probably be much better, and on a fair way to recovery. If severely attacked, a second bath and similar treatment to that just mentioned must be repeated. When negligence and want of proper care and food have allowed the sweat to develop into its more virulent form of distemper, more drastic measures must be adopted. The nostrils and eyes must first be cleared of the matter formed there by gentle bathing with warm milk and water; after which a bath, as above described, in luke-warm water, to which is added some Condy's Fluid, say, one dessert spoonful to a quart of water. When the animal has been thoroughly dried, a little vaseline may be applied round the eyelids and upon the nostrils. This done, the patient must be transferred to some warm flannel and placed in its hutch. After about two hours, a dose of ten drops of cod-liver oil or five drops of castor oil may be given, followed by a meal of warm milk, in which half its bulk of beef tea is mixed. The feeding should be at short intervals four or five times a day, and the food be

given in smaller quantities: milk and beef tea alternately or together, or the former with a hen's egg beaten up in it. When the ferrets commence to regain strength and improve in health, a little flour and very finely-chopped suet may be followed with some milk, and then a return to bread and milk and small additions of animal food.

Invariably we have found a small barrel the best hospital for sick ferrets; but if this cannot be had, then nice clean, fresh hutches must be used. We have always found the bath of warm soap and water with the Condy's Fluid as efficacious against distemper as any other remedy.

Foot-rot is the most debilitating disorder from which ferrets suffer, but is in every way preventible if only the common rules which guide the management of ferrets be regarded. It may result from three causes, the chief and most fruitful of which is the habit of putting ferrets away after a hard day's work without cleaning their feet and tails. Particularly in wet weather, but also at any other time, after a few hours' work the claws and toes of the animals become matted with "fleck" and dirt, while the ulterior portion of the tail, from continually dragging on the moist, sometimes clammy soil within the burrows, becomes coated with earth. When the ferrets are returned into hutch in the evening, it is necessary to remove these accumulations of dirt, even by washing if necessary, as the parts to which dirt may have clung are generally so matted with the obnoxious substances, that the animal, though nice as to cleanliness, quite fails to remove them.

The second cause of foot-rot is the same that aggravates sweat into distemper, and is the cause of scab, viz., dirty

hutches—damp and filth in the hutch, owing to a continued omission of cleaning out and replacing the old dirty straw by new, fresh and clean. Another, no doubt, fruitful source of foot-rot is the use of wire netting or perforated zinc in the hutch floor. The claws catch in the uneven crevices, the feet become lacerated, and the result is foot-rot.

Under the affliction of this malady, the toes round the claws become sore and feverish, the interstices of the feet are similarly affected, and proud flesh soon commences to form, the inflammation increasing in the feet. The fungous growth both about the claws and on the tail must be thoroughly removed either with a knife or the thumb nail, in spite of any bleeding which may result; but one must be careful to get all the scabby portions off. When the rot has not obtained any great hold, the immediate cause may be removed by washing the feet and tail in strong, warm, soft soap and water, which will bring away all dirt and discharge from sores; afterwards the parts should be washed again in plain water, to lessen the stringent effect of the soft soap, and some remedy applied to stop the spread of disease and inflammation. For this purpose a little powdered sulphur made into a stiff paste with equal parts of sweet oil and turpentine is suitable, being a not too drastic application.

When, however, the disease has made more headway, there is nothing for it, if you want to save your ferrets, but to apply severer specifics. The fungous flesh having been removed, the tail and feet must be dipped in turpentine, which will cause the animal considerable pain, and it is

necessary to muzzle it. After immersion of the parts, it must be transferred to a quite clean hutch containing for litter clean evenly laid wheat straw and a piece of flannel, in which it may make its bed. The food must be confined to bread and milk, or milk with some flour and suet boiled in it, and twice daily the following very effective ointment must be applied carefully and thoroughly to the diseased parts :

Turpentine	1 Part.
Tar	1 do.
Sulph. Copper (powdered)	3 do.
Red Precipitate (do.)	1 do.

Pound the bluestone and precipitate finely together first, and then add them to the tar, using sufficient turpentine to render the consistence of the ointment not too thick. The first two or three days' application of this will cure the foot-rot, upon which its use may be discontinued; and a daily washing in the strongest solution of bluestone possible, followed by the application of a little vaseline, may be continued until a complete cure is effected. We have found foot-rot a very annoying malady, and very difficult to get rid of; so that the necessity of preventing it is important.

Ferrets very often acquire from freshly introduced animals a skin disease which partakes of the nature of mange, but from its nature should rather be termed scab. A slight eruption appears on the skin, chiefly about the back and sides, and causes considerable irritation, which makes the ferret scratch and gnaw until a sore is formed. The malady is, in the first instance, generally made known by this

scratching. A remedy which may succeed is Spratts Mange Lotion for dogs, to which an equal portion of glycerine has been added; but an ointment and mode of application intended for dogs suffering from mange is very efficacious in curing scab in ferrets, if a slight modification in its composition be made. One must first have the following made up: Ung. resini, 3oz.; sulph. sub., 1oz.; ol. junip., sufficient to work up the two components into a thick ointment; but before it is applied to the affected animals, sufficient sweet oil must be added to render the mixture of about the consistency of cream. While being treated with this, the ferret must be muzzled, to prevent it from licking itself. In the morning wash and thoroughly dry, and rub in the remedy equally well to the skin; next day wash again, and repeat the process in all three times, when in all probability a cure has been effected; if not, a subsequent repetition of the remedy in a week's time will bring about the desired end. It must be borne in mind that the ferret is a tender animal, and consequently the repeated washings and dressings must be made with care. One dressing of the above will effectually remove all lice, fleas, or ticks which may, and frequently do, appear in large numbers upon some ferrets.

Ferrets suffer a good deal from worms, much more so than is generally believed; but six grains of areca-nut, ground, given in two pills of butter three hours apart, followed each time by about five or six drops of castor oil, will prove effectual.

As will be seen, most of the diseases to which ferrets are liable are brought about in the first instance by want of

cleanliness, or by improper management. It will be found in the treatment that proper care and scrupulous cleanliness will always go a long way towards mitigating, if they do not wholly cure the malady from which the animals may suffer.

PART III.

VERMIN.

CHAPTER XXVII.—GROUND VERMIN.

The Polecat.

UNDER the general name of "vermin" are included a number of animals and birds whose natural instinct leads them to destroy other birds and animals of an opposite character, the existence and increase of which are desirable to the occupier of a particular estate. These generally consist of poultry and game, besides many wild birds, rabbits, and hares.

The habits and haunts of vermin, although to many a subject of commonplace knowledge, are, to the generality, rather obscure. It is, however, a matter of necessity to the game preserver to be well acquainted with the signs of their depredatory habits, so that he may wage successful war against these diminutive enemies both of himself and the poultry keeper. Game preserving is, to a great extent, dependent upon the vigilance with which stoats, polecats, &c., are sought out and extirpated, for the quantity of birds, hares, and rabbits they capture, destroy, or leave after having sucked the whole or part of the blood, is enormous, and if left unmolested vermin multiply and

increase to such an extent that they would soon clear off all the game.

One common characteristic of them all is a large amount of cunning, and, at the same time, great fear of man being near their habitations or about their neighbourhood. This strongly prevails in all the weasel tribe, and, despite their pluckiness when captured and "cheek" when one comes upon them unawares, their temerity at the scent left by man is very surprising. To be able to cope with them successfully, an exact knowledge of their haunts and habits will be necessary, and although, taken generally, there are points of resemblance between the several kinds, still, in detail they differ considerably. Before passing, therefore, to consider the best means to be taken for their capture or destruction, we will take some notice of the natural history of each. First, we will take the weasels, namely, the polecat, stoat, weasel, and marten; then the otter, badger, and also one or two more animals, which, while showing a destructive habit as far as game preserving is concerned, are not, in the strictest sense of the word, vermin.

The polecat, the largest of these members of the weasel tribe, is, without doubt, one of the heaviest scourges of poultry, game, and rabbits, and, considering its size (about 18in. in length), it is the most rapacious of all vermin. Not only will it kill the animals which are its ordinary prey, but will sometimes attack and destroy geese and turkeys. Stoats mostly confine their attention to game and rabbits, but the polecat has certainly a predilection for poultry, probably because its chief pleasure is found in wholesale destruction and killing, for a polecat will often in one single night kill

more than it could consume in a month. Furthermore is this mustela of such rapacious instinct that it has been known to capture eels in a river, and frogs, newts, toads, and fish are liable to its attacks. Birds, chiefly game, it catches by stealing upon them at night and silently inflicting a sharp and quick bite into the brain, which either kills them instantly or else throws them into complete insensibility, during which it proceeds calmly to suck the blood from the veins. In this manner, should it come suddenly on a covey of partridges, it will oftentimes fatally wound, if not all, still a fair number, before they are sufficiently aware of their danger to make efforts to escape. Hares it will destroy in much the same manner, and steal upon them during the day when they are complacently dozing under shade from the sun, or at night time when they are busily occupied in feeding. Nor is the polecat devoid of perseverance, for by dint of enormous endurance and a remarkably acute power of scent, it will follow a "start" hare through all her wanderings, to eventually run poor puss to death. Rabbits fall victims to the polecat in the same manner that they do to stoats, namely, by the vermin tracking them to holt, and, when there, using their superior cunning as a complete set-off against the knowledge the rabbit has of the many intricacies of its burrow. Rats, too, both those frequenting the water side and those in corn stacks, are attacked by the polecat occasionally, the latter more than the former; but as no rat dies without a fight—and they certainly have the greater advantage on account of the smallness of their holes—they are generally not so acceptable to the polecat as they might be were they tamely to submit to be killed in the manner of hares or rabbits.

We fancy that in localities where many of these pests remain there is no species of vermin caught, killed, or shot with more satisfaction to either the poultry keeper or game preserver, who may have suffered from their depredations, than the polecat; and when a keeper may be seen complacently regarding the particular tree accorded to his use, one may be sure that, among the fetid collection, the animal which has earned for itself the worst notoriety of English weasels will probably not be unrepresented.

Mention of the fetor of most kinds of vermin suggests the polecat's most objectionable peculiarity, namely, the secretion of a substance of disgusting odour near the tail and the power of emitting the stench at will; indeed, when the animal is attacked it emits it to such an extent that the smell will adhere for some time to anything with which it may come in contact. It is produced and secreted in two small pouches (not one, as often stated) situated beneath the tail, and is evidently a means of protection, exemplified to the full in the skunk of America.

As an example of the superstitions that survive, even to this day in some parts of the British Islands, we find farmers encouraging the polecat and even protecting it, averring that it is possessed of an instinct capable of appreciating hospitality, and that, such being the case, it will on no account commit any havoc against the man who affords it the shelter of his buildings. Expostulation in such cases is unavailing, and the mistaken agriculturist must be left to the teaching of experience—an unkind mistress.

The polecat, as far as its colour, &c., goes, is not much known, and a description of the stoat is often volunteered to

illustrate the larger and more destructive animal. Its head is, comparatively speaking, broader than the stoat's, the nose pointed, the ears round, slightly haired and rather inconspicuous; the neck, in comparison with the stoat's, is short. The tail is more inclined to be bushy than the ermine's or weasel's, and while much of the shape of that of the ferret, has more hair upon it. In colour individually, polecats differ a good deal, for the reason that there are two kinds of fur on this mustela, one being short and woolly, the other long and more hairlike. The former is of a pale yellow colour, and the latter a bright brown, darkening almost to a shining black; the apparent shade of the animal's fur thus differs according to the respective lengths of the particular hair predominating; hence probably a good deal of the confusion as to these two members of the weasel tribe.

The polecat generally constructs its nest in a rabbit burrow, and, moreover, one in a light sandy soil. This nest it makes not unlike the rabbit's, but noticeable for the smoothness and great regularity with which the moss, dry leaves, &c., are built together. Occasionally the vermin will scoop out a burrow, or rather hole, for itself, but it prefers the former and less troublesome way. Sometimes, again, the crevices of rocks of large size form a suitable retreat, and in others a heap of large stones is the chosen place. The young ones number generally four, five, or six, seldom more, and are brought forth during May or June—a favourable time of year for their discovery, capture, and subsequent destruction.

Besides the name of polecat, various others are allotted to this particular animal in different districts, most of them

having reference to some attribute. "Fitchet" and "fitch" are names having reference to its hair, and are mostly used in the western and southern counties. "Fulimart" and "foumart," both evidently corruptions of "foul marten," are chiefly employed in the north. Besides these there are many others of occasional occurrence, and we have heard the polecat termed the "wild-cat," probably through its being confounded with that animal.

The favourite haunts of the fitch are not necessarily in the neighbourhood where it makes its breeding place, being for preference, we fancy, at some distance off. The stoat and weasel are accustomed to some extent to live in batches of five or six, but the fitches prefer a more solitary existence, and rarely live more than two or three together, and at a fairly wide distance from others of their kind. Small dark fir woods with a rough but dry surface of ground are, we should say, the most favoured spots, and, moreover, those particular ones which occur so frequently at sharp corners of fields, and along entrance drives, such, in fact, as wood pigeons love to roost in. After these woods, if we may so term them, rough and broken ground, well diversified with large boulders, interspersed with clumps of thick, low, bristling covert, overgrown with brambles and briars, situated for preference along the side of a stream or river, form the places of habitation most agreeable to the polecat. Again, large expanses of oak copse situate on a rough stony hill side prove acceptable, and, to sum up, in fact, any ground well and closely wooded or covered with brake is the situation the vermin we discuss finds most conducive to its comfort and enjoyment. In these places the polecat makes its haunts, and

to the particular burrow, hole, or nook chosen as its sleeping place does it convey a great part of the number of its victims, and by dint of search, one may often discover the tracks pointing to its misdeeds and so take steps for the capture of the marauder.

When the polecats, for the purpose of seeking food or to gratify their rapacious instinct, leave their habitation, they prefer to quit it at one extremity, and should it be a wood or plantation, of the nature described above, in which they have taken their residence, they will nearly always emerge from it at the highest side, and when it does not form a corner at one end or the other of it, they will make, according to circumstances, for the nearest rabbit burrow, and, if possible, one situated in a hedge or bank. Having made the run of it, and, perhaps—but unlikely—stopped to kill a rabbit and suck a small quantity of blood, they come out on the side nearest the plantation, and, running along the ground, turn off at the first gap; should there be at this spot a gateway, they are sure to stop and rub themselves against the bars and posts of the gate, offering, as may readily be seen, a suitable and most favourable spot for the placing of a trap or two, of which more anon.

It is always a very difficult matter to become acquainted with the many signs and small—apparently ordinary—occurrences which may point to the depredations of polecats, but, as far as can be explained by writing, we will endeavour to point some of them out. In the first place, the only undoubted evidence that any bird or animal found killed has met its death at the instance of a fitch is that the vermin always destroys life, whether it be of game, rabbits, wild

birds of any sort, or poultry, by a sharp bite right into the brain of the victim, causing, as we before noted, either immediate death, or instantaneous stupor resulting in death in a few minutes, during which time the vermin busies itself sucking the life blood of its prey from a hole in the side of the neck, bitten close up to the head. None of the other weasels employ this summary mode of causing death, and therefore, any animal or bird found killed in this manner may certainly have its destruction laid to the credit of a fitch, and this very manner of killing gives the polecat much more opportunity for the indulgence of its murderous instinct than if it employed the slower process of simply sucking the blood. Unfortunately, the fitch generally endeavours to carry away as much of its prey as possible, and removes them also in separate directions, thus leaving very little evidence of its depredations, except, however, in the case of poultry, which it rarely troubles to carry, be it full-grown fowls, or ducks, or young chickens and ducklings, but at times a gosling or two will be removed. Not only will this venturesome little beast come at night to reap its spoils, but we ourselves have had ducklings killed before twelve o'clock in the day, though we have managed to be one too many for the gentleman eventually. A dozen or eighteen young ducks of about a month old destroyed in three visits is not an immaterial loss, and many such cases have come under our notice. In one case we remember, the mischief was put down to the malice of gipsies. Also animals killed by polecats have sometimes apparently been mauled a good deal, that is to say, they appear to have been rolled and flung about. We fancy that the vermin in such cases plays with its prey and lies upon

it while sucking the blood—at any rate, an odour of the fitch's fetor will, should these surmises be correct, probably be present, and this will of course leave little doubt as to the perpetrator of the offence. Poultry are generally served in this manner, and often lie about indiscriminately and with their feathers ruffled, wet, and dirty. Rabbits the foumart mostly destroys in their burrows, and generally leaves them dead inside, a foot or so from the mouth of the hole; it rarely, however, kills more than one at a time, and will return to the same holt after sufficient time has elapsed for the rabbits to have quieted themselves down again in their old retreat. Partridges we have mentioned before, and a covey sometimes loses three or four of its members in a single night. Pheasants the polecat obtains when they sit at night on trees, and it will often steal upon the sitting hen and kill her on her nest; the eggs, however, it will not molest; hence, if the bird should be warned in time by the excitement of the small birds in her neighbourhood, who may have detected the vermin, she has at least a chance of escaping. The way hares fall victims we have already indicated.

With regard to the manner in which they contrive to catch fish very little is known, and as the instances of such occurrences are rare, not much opportunity is afforded for observation. Eels are, however, either most alluring or else easiest of capture, and it would be a matter of great interest to ascertain in what way the polecat accomplishes their seizure—presumably in much the same manner as the otter, only it is evident that greater stealth is necessary with the former than the latter, because, while the otter is only working in its natural state for the capture of fish, &c., the

polecat is obviously employed in an artificial one, which is, moreover, foreign to its habits and a cause of discomfort to itself. It is evident, however, that this freak (other name it scarcely deserves) is of a very rare occurrence, and brought about through the scarcity of ordinary food, or, perhaps, its unattainableness.

The possibility of crossing the polecat with the ferret is no longer a disputed fact. The breed or variety termed "polecat ferrets" is now not uncommon; indeed, these have become nearly as numerous as the others, and the question arises whether it might be possible to capture and tame polecats, and breed from them in confinement, to employ them in the same manner as ferrets. Whether this has been tried or not with success we are unaware, but we fancy that its feasibility is something more than probable, and venture to suggest the attempt being made, as we think, from the more adroit way in which polecats work, that, could their taming be accomplished, they would prove considerably superior to the cross or the common ferret. But this matter we leave to others.

The fitch, when attacked, fights with enormous pluck, and is a queer customer for a terrier, few of which will go in and kill it in the first round. It is an ill-advised indiscretion to corner a polecat, because they will often turn upon their aggressor, and the bite of one is always painful and lasting, so that in many cases, where they cannot be killed without fear of their retaliating, a careful attack must be made. These are words of warning, and we admonish the reader not to disregard them.

We noticed in the *Field* of 17th July, 1880, an eminently

typical notice of a "savage attack by a polecat," from which it appears that a gentleman, while fishing a small stream called the Beltie, in Aberdeenshire, startled a large fitch, which scuttled into a sand dyke—that runs along the burnside —with a peculiar screeching bark. On following it up he was surprised to find the plucky little animal standing guard at its hole. On further approaching it instantly flew at his legs, but luckily he hit it with the butt end of his rod, or else they would have probably suffered. Beaten off, it retreated to its hole, and stood at bay, screeching angrily. After changing his position several times, and trying to get at the animal, when it had made several brushes at him, the narrator of the incident had to give up the encounter, for owing to the fitch's tactics he was never able to kill it, remaining, as it did, mostly on the defensive, just within its hole, the blow given evidently rather discouraging the fierce little creature. Near one entrance to the hole were the well-gnawed remnants of two full-grown rabbits, one chicken, and the suspicion of a partridge. This is a striking instance of the boldness of the polecat, and we can only remark that similar experiences of this quality are not of rare occurrence.

We can say no more concerning the polecat without going into technicalities of little worth to the game preserver. Now that they are becoming less frequent every year so do they become more wary and difficult to observe. Close notice and constant observation are absolutely necessary to discover indications of the whereabouts of a polecat; and referring to what we mentioned concerning their presence, we cannot but impress upon our readers the necessity, when they fancy they have discovered evidence of a polecat's

existence, of using their best endeavours once and for all to find the direction of its habitation, and, having perchance detected that, of employing all the traps and wiles (to be hereinafter detailed) which may contribute to its capture and destruction.

CHAPTER XXVIII.—GROUND VERMIN.

The Stoat.

SMALLER than the polecat, but considerably larger than the weasel, the stoat may certainly be regarded as the type of "vermin" (measuring over all about 14in. to 15in., of which the tail shares about 4in.). The stoat and the weasel, in spite of the marked difference in size, are confounded more often one with another than we should fancy any other animals to be met with in the British Isles; yet, not only in size, but in appearance, habits and haunts, does the larger differ from the smaller mustela. Rapacious to a degree, and unswerving in its determination to kill, the stoat is, owing to its great numerical superiority over the polecat, at the same time one of our commonest and worst reputed vermin. Less bloodthirsty and less powerful than the fitch, it has not acquired the same skilful means of killing its captives that is characteristic of the latter animal, and is therefore not so daring or inclined to be solitary.

When hunting its prey the stoat employs nearly similar

tactics to the polecat, and pursues with the same extraordinary acuteness of scent and pertinacity of endurance exemplified in the fitch, and rarely indeed does its quarry succeed in effecting its escape. Hares seem to the stoat more palatable than rabbits where both are abundant, and upon the former it chiefly loves to prey. Being a small and short-legged animal it is, as far as regards speed, quite unable to cope with the celerity of the hare, and accordingly endeavours to run them down in the same determined manner of its larger relations. Many wonderful accounts have been written, chiefly in natural histories, on the fascination a pursuing stoat exerts over the hare, but exaggeration of what is rather a reasoning power into the result of fascination is but a short step, and one which, we are inclined to think, more often taken than is advisable.

When a stoat finds a hare, it first endeavours to come upon it unawares, and, failing this, of course, must seek to attain its desire by taking advantage when the hare is not looking, and making a dash. Should this succeed, then it is all over with puss ; but if she gets away unhurt she ambles off (as we may term it) at a rate sufficiently swift to distance the stoat, and continues it, hoping that her most persevering enemy will relinquish the chase. But the stoat is of a stubborn nature, and occasionally will decidedly not relinquish its aim, and, following steadily upon the hare's track, will, owing to its keenness of scent, eventually come up with her, while she is, perhaps, taking a short nap, the only recorded instance of which is not when the fabled race was run in which the tortoise played the most conspicuous part. The result, of course, is the usual one—namely, death on the

one hand, self satisfaction on the other. This is about all "this strange lassitude" consists of, and, looking at things from a common-sense view, we soon learn to shun a desire, always more or less predominant, to turn everyday occurrences of a commonplace nature into "powers of fascination," resulting in "failing faculties and oppressions of weird lethargy." We may take it as a fact that such occurrences as the habitual and perpetual persecution of one animal by another as a natural result of their existence simultaneously in the same locality will eventually so influence the nature of the one persecuted that it will not devote the same active exertions to escape as it would were such a persecution an occasional incident. This being so, theories as to fascination, and the like, may be entirely discarded.

When hares are not plentiful, the stoat finds in rabbits a most excellent substitute. It is particularly fond of stealing upon them when, half sleeping, they lie ensconced in their forms or seats, preferring, certainly, this mode to the more laborious manner of catching them in their burrows, which it does in much the same way as the polecat, only that in both cases, hare and rabbit alike, it kills by fastening either on to the neck of its captive or, like the ferret, below the eye (it prefers, however, the former place), and sucking the blood until the hare or rabbit, as the case may be, expires from the loss of it.

Being an excellent climber, the stoat is a greater enemy of birds than the polecat, and pheasants, as well as partridges, suffer sadly from its depredations; but, unlike the fitch, it has as much liking for eggs and young birds as for the full grown

ones; owing to its piercing sight and acuteness of scent, it can discover nests of all sorts more easily than any other animal, and climbing with strength and agility any tree, there are few nests that the stoat cannot attain; even those situated in hollows, &c., are, owing to the size of the hole, liable to admit the vermin; indeed, there are but few of all our birds that place their nests beyond the almost universal reach of the stoat.

Further, the stoat has a particular fondness for the squirrel, and in spite of the nimbleness of that pretty and harmless little animal, it occasionally falls a victim to stoats. We advisedly employ the plural, for we doubt if the ermine be sufficiently subtle to capture the squirrel single handed, one of the most vigilant little animals we have, and it is only by chance that one becomes "cornered" by several stoats hunting in company. In illustration of this we may relate an instance which came under our notice, showing clearly the peculiar manner which these vermin have of hunting in packs. We were one morning taking the usual round to examine some rabbit traps set in a certain field, along one side of which there are some large ash trees standing at various distances apart, and, moreover, planted in a deep hollow which runs up this particular side of the field. On approaching we heard a loud noise of vermin screeching, and on the lower branches of one of the trees, separated by a wide gap on each side from the rest of the row of ash, were three stoats in a state of great excitement, while on the ground were four more, equally excited, all evidently directing their attention to a squirrel on the highest part of the tree, which the three first mentioned were endeavouring to reach.

Immediately, however, that we made our appearance, six made off as fast as possible into a rabbit burrow in the hedge, while one on the higher branches of the tree was evidently too much engrossed with the squirrel to see us at first, but on doing so he took a fine leap off the tree on to the hedge beneath, and was, no doubt, soon discussing the matter with the rest. Probably the stoats imagined that by a little skilful manœuvring they would be able to capture and make short work of the squirrel.

This habit of hunting in small packs, so to speak, is rather a curious trait. They go about their work in a very regular manner, and we have seen recorded that as many as fifteen have been observed in one pack.

The stoat will on occasion readily attack man should he assail it, and they then prove themselves more determined than the polecat; but rarely are they to be feared, except in cases such as the one mentioned above, as the killing of one would probably incite the others to anger, and, owing to the number of them, they would prove rather troublesome to get rid of.

The stoat seems to have very little dread of the water; indeed, it takes no more heed of swimming a stream than the otter, and will often for its gratification take a short swim. It may be as well to remark that water rats are equally often attacked by stoats as by polecats, and when by the former they do not often come very satisfactorily out of the fight, as, should they take to the water, their persecutor does the same, and, pursuing them with as much ease and quickness as if on land, often kills them; indeed, more often than is the case with the polecat.

The nest, or rather store-house and lair combined, of the ermine is often constructed, as far as safety and concealment are concerned, in a most clever manner, and to this suitably contrived larder it conveys that portion of the number of birds and animals it destroys which are considered fit and acceptable food for consumption. These lairs are generally employed also as the nest in which the young may be born and brought up. The stoat, during this period, namely, while the breeding season continues, seems rather to depart from its usual mode of diet, and to obtain little delicacies to suit the fancy of the female, or, perhaps, for the young, that they may consume flesh at the earliest possible stage of their existence, and such "delicacies" generally consist of field mice, small birds, frogs, an occasional water-vole, shrews, young rabbits and hares, in some cases a partridge, also but rarely, a woodcock. These are but some of the many delicacies which the stoat provides for its mate and progeny, and is always most careful to lay or store them in a neat methodical manner. Indeed, there are few animals whose lair is more a model of care and neatness than that of the ermine, and we cannot help admiring the instinct of such wonderful regulation unswervingly producing results of evident comfort and satisfaction to the animal in which it is generated.

Much as the stoat resembles the fitch, so also does it in many ways differ from it, and not more so than in the haunts which it prefers and the habits it follows. With regard to the former, while the polecat, as we have remarked, has an undoubted tendency to become solitary,

or rather, semi-solitary, the stoat, on the other hand, is inclined to the opposite, and it must be observed that they do not live even in single pairs, wide apart from others (the breeding time, of course, excepted), but congregate, so to speak, in or adjoining some favoured spot in a wood, brake, or plantation, where they form a little colony amongst themselves for mutual protection and defence; sometimes they choose a small or large area of rough or broken ground in a field, more especially such heaps of big stones or boulders as we occasionally observe to have been collected from the surface and removed to an out-of-the-way corner, or, perhaps, the very centre of a field; sometimes long rough rows of such stones or boulders, along the side of a stream, and generally plentifully overgrown with briars and rough surface growth. Again, roughly excavated holes, such as old lime, gravel, and stone pits, in fact, any place at all resembling one or combining all the features mentioned. In such favoured spots as these does the stoat find a suitable neighbourhood in which to make its dwelling, consisting mostly of the holes and passages naturally formed when large uneven stones are heaped together, and to this fastness will it always retreat should it consider danger as likely to occur, being able to traverse it with facility, and effectually "dodge" any animal which may follow it in and which might prove too dangerous an adversary. From these holes do they issue at odd times and at various parts, in ones, twos, or threes, and sally off on their predatory hunts.

Similarly to the fitch, the stoat is also fond of running

a hedge before commencing its work in real earnest, probably owing to the fact of its having just left the dwelling in which it sleeps with considerable zeal, spending a fair half of its time, or more even, in renovating its energies. Unlike the larger vermin, however, the stoat mostly, but not entirely, hunts by day, and when so doing generally commences its operations at or before sunrise, a time when the various animals, birds, &c., upon which it preys, having only just come out to feed, are generally not so wide awake as might be necessary to their safety. As the day begins to follow on the morning the stoat retires to collect and look over its spoils, or rather, we should say, their spoils, for rarely does one act singly in the above-described routine.

Compared to the weasel, the stoat is in England generally less frequently met with, but in higher parts, that is, in the greater portion of Scotland, it is undoubtedly of much more frequent occurrence than the smaller animal. Its agility is considerable, and in spite of the peculiar length and litheness of its body, it can run at a really astonishing pace, at the same time employing very elegant motions, and showing always a very animated appearance, leaping and bounding along in an easy and free-going gallop. As to whether it hunts by scent or sight, "opinions differ," and doubtless the stoat's opinions differ too, and being an instinctively intelligent little animal, it adopts the manner most suitable to the occasion.

Besides the very general name of stoat, there are a multitude of names employed in various districts to denominate this mustela, amongst which are "ermine,"

especially when the animal has donned its winter coat (of which we shall speak presently). The "ermine weasel" is another mode of referring to this change of colour in the fur. "Stout" and "stat" are but corruptions, while "black tail" refers to the animal's "terminal appendage." "Greater weasel" is another name. To enumerate further ones would be a considerable task to very little purpose, for they are mostly employed in rural districts and limited to the inhabitants of certain villages.

Many people are ready to assert that there exists no animal which, however destructive be its nature, has not redeeming qualities. They would experience very great difficulty in convincing the game preserver as to the usefulness of the polecat, weasel, stoat, &c., though, as to the last named, the value of its fur, when known as "ermine," they would no doubt advance with considerable energy, and, as far as it goes, they would be correct. But it is very doubtful if the stoat is worth preserving in the British Isles on this account. That the stoat, fetid, savage, and rapacious little animal as it is, should provide the costly and regal fur known as ermine is one of the many caprices incidental to the animal kingdom, and one which is, we may say, the least widely known. A popular error is to make a distinction between the stoat and the ermine, as if such a paradox as a distinction between one and the same animal could exist, but even now there are many—very many, indeed—who are perfectly ignorant as to the identity of the ermine and the stoat. Further, the word "ermine" is immediately associated, as far as its habitat is concerned,

with the intensely cold and inhospitable regions of Siberia, and it is, moreover, a general mistake to suppose that the change of colour in the stoat's fur requires degrees of cold far below zero before it takes place. The most known or summer dress of the stoat is a dull reddish brown over the upper and outer parts of the body, while the under and inner parts are of a yellowish white, or rather, what is generally termed cream colour. The tail is, at the root, of the same colour as the body, but deepens off to quite black at the end, about half being one colour and half the other.

The winter coat of the stoat is nearly white throughout, but not wholly so, as it retains in all cases, to more or less extent, a slight tinge of yellow, more especially upon the inner and under portions of the body, but not so noticeably yellow as the white markings of the summer dress. The tail, however, retains its black colour without any change, and contrasts in a marked degree with the rest of the body.

In England the alteration in the colour of the fur is of rare occurrence, except in the higher and more exposed parts of the kingdom. In Wales and Ireland, however, it is occasionally noticed, while in Scotland, in the southern counties, it is common, and in those situated north of the Forth and Clyde very common indeed. Except in the last named portion of the kingdom, the change is seldom perfectly completed, and if, as far as colour is concerned, it does take place, still the fur is rarely sufficiently blanched to become of much commercial value. But in the most northern parts the transition from the

dark to the lighter coat is generally complete, and there is no appreciable difference between the ermine imported and that obtained from the bleak moors of Caithness and similar counties.

That this peculiar variation in the colour of the fur takes place more often in England than is generally supposed, may be very likely, but it rarely comes to people's notice, probably on account of its occurring in places which, owing to the roughness and severity of winter on such exposed lands as would most likely cause the change, are rarely, if ever, visited by those persons who take an interest in such matters, and could draw attention to any instances which might come under their observation.

While agreeing as to the cause of this alteration of colour, authorities differ as to the exact manner in which it is accomplished, and even now it is not satisfactorily demonstrated whether the colour of the hair, or the hair itself is changed; but no doubt it follows the usual course of such changes, the colour changing in autumn, and the fur being shed in spring.

It was generally supposed at one time that the blanching of the stoat's fur was an ingenious provision of Nature to guard the animal from its pursuers during the winter months, when scarcity of food, and exposure to the severities of climate while in search of it, would cause it to lose that natural discretion and fear of man which are prominent points in its character. The result of this would most certainly be its discovery and consequent capture, were it so easily distinguishable as its red-brown fur causes it to be. This is, however, a mistaken idea,

and one that is, to say the least, a remarkably feeble explanation of the change. Were this the case, a similar explanation would hold good with regard to the arctic fox and polar bear, which, as is well known, are white; and many other animals and birds, &c., inhabiting regions rarely visited by man, have white as the most prominent colour in their fur and plumage respectively.

That the change has something to do with the defence of the stoat against the cold of winter is evident, and when we come to look into the matter, we may fairly say that cold is the primary cause of an alteration in colour that may be necessary to defend the animal upon which it occurs against the conditions which brought it about.

That dark substances radiate heat in a much more effectual manner than white or light coloured ones is well known, and it is in connection with this that we may find the cause of the change in colour of the stoat. In order to be better able to collect and retain any small amount of warmth, the fur of the stoat living in more northern latitudes must necessarily be lighter in colour, hence the reason of this blanching of the fur.

CHAPTER XXIX.—GROUND VERMIN.

The Weasel.

THIS mustela, the smallest and most common of the weasel tribe, is, owing to its approximation in figure and habits to the larger and more destructive stoat, the cause of considerable confusion in the natural history of both, although the difference in colour and size should serve to distinguish without doubt the one from the other, even were there no other distinctive points between them. The weasel is of a very red-brown on the upper and outer parts of its body, and pure white upon the under and inner parts, while the tail is of the same red-brown colour as the body and perfectly uniform. The stoat, on the other hand, is dull red-brown above and a dirty-yellowish white beneath, and the tail is black at the extremity, and longer and more bushy than that of the weasel, while the latter animal is about half the size of the stoat; their habits, too, vary to a considerable extent, as we shall presently see. Upon the question whether the weasel should be treated in the same manner as the fitch or stoat, much has been written and said, some asserting that the useful

traits in its habits are so trifling as to be scarcely worth mentioning, while others claim for it the distinction of being extremely useful in the destruction of mice, rats, and moles, in and around farmyards, &c. Be this as it may, our experience has satisfied us that the weasel is as much "vermin" as either the stoat or the polecat; comparatively speaking, equally predacious, and equally unwelcome to either the poultry keeper or game preserver. That the weasel is materially less obnoxious than either of the larger vermin is very natural, for, besides, being a lesser and weaker animal, and consequently unable to cope with so many or so large birds, it turns its attention in a direction in which its habits are not so antagonistic to our wishes as they might be were it to follow more closely in the ways of either the polecat or stoat. That the weasel is occasionally, and in certain districts often, found "making it warm" for rats and mice in corn ricks and barns, is no doubt correct; but to judge by what is most certainly the exception, and form an opinion accordingly, is rather an eccentric mode of determining points of natural history, but this is, nevertheless, the case with the weasel, and, whatever may be said or written, we may rest pretty well assured that it has not earned a bad reputation through good and useful deeds.

That the weasel has a predilection for game, as far as flesh goes, is obvious, and after that it prefers hares and rabbits, choosing, however, in all cases young birds and young animals where they can be obtained, but, failing this, will attack quite unhesitatingly the full-grown ones. Ducks, fowls, and geese are also acceptable to it, and,

in fact, birds of any sort that it is capable of catching and killing. The mole, water vole, field mouse, shrew, and all such animals are liable to its attacks. But far and away is the weasel the most determined and wholesale destroyer of eggs that we have; not discriminating for one moment between the smallest of our wren's eggs and the large unwieldy production of the goose, the little animal will break the shell and consume a nestful, or, in the case of poultry, a single one, and break and destroy the rest. A determined and agile climber, no nest is secure from its visits, and, except they be indeed placed in holes with most diminutive entrances, there are few of the many birds which build in tree-holes and crannies that may not expect to find, at some time or other, their eggs destroyed or perhaps be captured themselves. Equally rapacious in its pursuit of young birds, the nests are not safe even during the time that the young are being reared, and often does the parent bird return to find the destroyer snugly curled up asleep amongst the dead bodies of its prey. "It will hunt the mole, the field mouse, and other small quadrupeds in their usual haunts, not only by the eye, but also by scent; and most amusing it is to see one of these flexible agile little creatures tracing up the scent when at fault. They will quarter the ground like a dog till they hit it off, and, to lose no help from the eye, will occasionally sit up, raising themselves on their hind quarters to gain a more extended view around them. Their perseverance will tire larger and stronger animals than themselves, nor will water stop them when their game takes to it for safety." This correct description appears

in the first edition of "Knight's Cyclopædia," and we reproduce it, as it describes the way weasels—alone of all the vermin—have of sitting bolt upright to take a view around when in chase of such prey as shrews and mice. No animal is more audacious than the weasel, and few more foolhardy, and were its audacity to proceed from "pluck," one would, indeed, admire this characteristic of the "varmint;" but, unfortunately for those who champion its cause, this is not the case, and what would be courage dwindles down to impudence, caused by a want of that greater amount of instinct as regards safety that the stoat and polecat possess.

Another case of "opinions differ" exists with regard to how the weasel kills it quarry, some saying that it employs the more skilful manner of the polecat, and bites into the brain. They do not bite into the brain as a rule; on the contrary, such a mode of killing is most exceptional in the case of the weasel—we had almost written unknown. The stoat and the weasel both employ the slower means of killing by sucking the blood. The latter always fixes itself to its prey just at the back of the jaws and rather under than on the top of the neck, and then throws the hinder part of its lithe and supple body on the back, whether of bird or quadruped, while with its strong forelegs it endeavours to embrace it round the neck. Similar in nature to the polecat and stoat, the weasel has a habit of killing many more animals than it can possibly consume, evidently for the reason that it delights in slaughter, and it endeavours to overcome and destroy every living thing which may be included in the long category of birds and

animals, with the death of which it continually endeavours to appease its bloodthirsty appetite. Undoubtedly, owing to the confusion of the stoat with the weasel, the latter gets credited with a good many of the misdeeds of the former, and, perhaps, also many depredations committed amongst eggs and nests by the weasel are laid to the share of the stoat.

It is a popular belief that weasels will attack and destroy snakes, but as several experiments have been made of confining the vermin with a snake, and in every instance they have failed to take any step of the kind, we may take it for granted that this is as much a fallacy as imagining that this mustela is, contrary to the general run of vermin, a most useful animal and worthy of our constant protection.

In much the same manner as stoats, weasels will form themselves into diminutive packs and hunt in company. but adopting a more systematic style of attack. When bent on these expeditions they always march in single file, and a particularly ludicrous aspect they present. Their aim is generally an attack on some rather formidable antagonist—perhaps the ousting of a community of rats from a burrow in which the vermin may desire to take up their abode.

Weasels have a favourite practice of running out from their habitations and making a complete investigation of anyone who may happen to pass. One weasel, we well remember, that had selected a certain wall for its lair close to the house in which we were then living, was in the habit of rushing out to note the appearance of all carts

and carriages that passed along the adjacent road. Not willing to molest it, we did not attempt its destruction; but one unlucky day it was too inquisitive, and felt the weight of a cart wheel upon its back.

Not only will the weasel commit the above named indiscretions, but an occasion has come to our notice when it made a rush at and inflicted a bite upon a dog before the latter was able to turn upon its aggressor. More especially will it attack them when they accidentally come sniffing about the nest, when the varmint becomes literally wild with rage, and flies at the intruder in a most determined manner, often, indeed, lessening any chance of its escape by the foolhardy mode of its aggression.

Many instances have occurred of weasels attacking human kind, and in these aggressive operations they are always numerous enough to cause some trouble to men to repel the attacks without incurring injury, while women and children have been known to suffer rather severely from their fierceness. But in latter days weasels are less plentiful, and have, perhaps, a better sense of their insecurity, and such uncommonly impudent behaviour on their part is now rarely met with. In most cases it occurs through a large number of the vermin having taken up their quarters in a suitable situation, bordering a road or path, which they probably consider a domain not to be invaded, and in the case of anyone passing by or disturbing them, are prompted by the consciousness of some "inalienable" but scarcely "concurrent" right to resist intrusion.

The habits of the weasel and general manner of living differ considerably from those of both the stoat and polecat,

while its haunts are still more at variance with them; indeed, as far as habitation goes, the weasel lives in a community not unlike that adopted by the rabbit. Whilst the fitch is nearly solitary, and the stoat more sociable than the polecat, so is the weasel, in the same comparison, more so than the ermine, and more open in the selection of its favourite places and spots in which to form its lair.

Its nest, or place in which the young are born and reared, is generally chosen in some snug corner, well calculated to keep it dry and warm, besides thoroughly comfortable. It is formed of dead leaves and grass, with moss and odds and ends of a soft and dry nature, and, for preference, is made in a crevice in a hedge, bank, the hollow of a tree, between or under a heap of large stones, or in a hole in a stone wall. Sometimes, having turned out the rightful occupier, it will take possession of a bird's nest, which may be suitably situated, and bring up its young in this. The female brings forth at each birth from about four to six young, and the number of litters in a year is always two, and sometimes three or even four. The greater part of the food it obtains is carried to the nest, and deposited in its near neighbourhood in some nook doing duty for the store house, but not such a well kept one as the stoat's. It will also occasionally form a burrow for its nest, but usually prefers the easier ones mentioned already. When it does scoop out a home for its young, this rather laborious undertaking is made in some dry sandy soil, and is rarely of great extent. It has rather a liking for the runs of moles, and will often, after having killed off the owner of one of these extended ramifications, take possession of

the run for the purpose of bringing off a litter of young ones.

The localities which the weasel likes to frequent are similar to those of the stoat or fitch, and differ considerably from those in which it constructs, or in some cases finds, its breeding place. Preferring more open and sunny spots, and courting at no time darkness and solitude, the weasels form themselves into small communities, which, compared with those of the stoat, are large, ranging in all instances from about six to even fifteen members, generally an equal number of males and females. Affecting always situations of a corresponding kind to those agreeable to the stoat, the vermin under notice, however, choose those situated on high ground, which is well open to the sun, and among the most favoured spots may be enumerated the following, as showing the general nature of the locality in which they may be mostly looked for. At all times stone walls are its special resort, and particularly those forming boundaries to fields, made of large stones or boulders piled up with a sort of half regularity, which have always one or two gaps where the stones have fallen away from their placed position. Along such boundaries brambles and gorse, besides low bushes, are sure to be present, and should this wall be the parting between a covert or wood, then it is certainly a "most likely place, and no mistake." Again, those small hollows sometimes present in pasture fields—a sort of miniature gravel pits—which are always partly covered with a rough brake of brambles and the like; along high banked roads, too, where cutting has been made to acquire a better level, or where the road is cut

into the side of a hill; further, by the banks of still flowing brooks and streams, wherever a more than ordinary rough place occurs, or where, perhaps, a dividing hedge or bank reaches right down to the water; small fir plantations and little woods having a warm and sheltered situation, and that are well open to the sun—indeed, to cut a long list of places short, any of those mentioned as agreeable to the stoat and polecat, only that they must be light, airy, and warm, instead of being dark and closely sheltered. Such spots do weasels frequent, and forming, where necessary, tortuous and narrow passages leading to some larger ones, they collect together in little communities large enough to successfully cope with such enemies as they may have, besides men and dogs, and capable of attacking those animals whose presence in certain places may be considered inimical to safety and quietude.

From these dwellings the little animals issue, and going off in batches, each in single file, seek their prey and pleasure —first, of course, as above noted, eggs and young birds; and in all cases a farm where plenty of poultry unconfined exists will certainly be paid a visit, and a search be made for the nest of such unruly members of the yard as may think proper to lay astray. The quantity of eggs destroyed, and never discovered, that are lost in this manner must be very large, and no conception can be formed of the cunning manner in which weasels possess themselves of the eggs without disturbing the hen. Sucking rather than breaking the shells, the weasel which may have been sharp enough to discover such a windfall takes care not to disturb those of the eggs of which it cannot conveniently consume the

contents, nor does it draw the attention of any of its friends to the luscious supply. This is a curious trait in this vermin's character, and many instances have been noticed and recorded by others of this peculiar selfishness, besides one or two which have come to our knowledge. When there are no fowls' eggs to be obtained, should the season offer, search is made for those of all sorts of birds, and to obtain these the weasel will, if necessary, warily climb any tree to obtain a nest which its surprising acuteness of scent and sight may have discovered, and endeavour to rush upon the parent bird should it be sitting.

The eggs of all game birds are particularly liable to the attacks of weasels, as they are mostly deposited in such places as are sure to be more or less frequently visited by the vermin; besides, being in all cases on the ground, they are more certain to be detected. In this direction a great deal of harm must be done; in fact, we should fancy that more damage is caused to game preserving by weasels than by any of the other mustelidæ.

Not only are the eggs of game birds open to the attacks of weasels, but also the young from the time they are hatched until sufficently matured to take a long flight. Taken altogether, there is some long period during which our partridges and pheasants may or may not have their nests destroyed, and the vermin is a most indefatigable searcher, as noted before, when eggs and young birds are to be obtained. Creeping stealthily up from behind upon the parent bird whilst seated on the nest, the weasel invariably makes a rush to obtain the bird as well as her brood, and unless the vermin is not quick, or, perhaps,

strong enough, it generally succeeds in its destructive purpose.

Hares, also, are sometimes captured by weasels, and, in most cases, single-handed—rather a large performance for such a diminutive poacher, no doubt, but still occurring pretty often. In such an attempt the weasel, of course, has to exert more than ordinary cunning, and proceed in a most cautious manner, searching carefully to discover a hare, and, moreover, one that is fast asleep. The weasel slowly but steadily approaches until it considers itself sufficiently near to make the final rush and attach itself to the exact spot on the hare's neck necessary for an easy sucking of the blood. In all cases the hare makes some resistance, endeavouring to detach the vermin, which, however, clings with leech-like eagerness, until puss, having used her utmost endeavours to escape from her diminutive but wanton enemy, and feeling the loss of blood, eventually gives up and quietly dies.

On other occasions, however, more than one weasel will attack a hare, and often a little army of six or seven. Of course, when this is the case the hare runs but a poor chance, and once caught and set upon is very soon numbered with the majority. Rabbits are more open to attack than hares, but are comparatively less often destroyed, being more difficult to get at. Rarely are rabbits caught whilst sitting out or sleeping; when such a chance occurs the rabbit's discomfiture is brought about in the same way as the hare's, only that generally the particular formation of his seat leaves him exposed to an attack in rear. When, however, the vermin discover a solitary one, or perhaps two

rabbits in a burrow of not too great extent, and there happen to be four or five weasels together, the one which has discovered the presence of the intended prey will screech in an excited manner, and so summon the others which may be near at hand; they will then all enter the burrow at the different points of ingress, cautiously search until the rabbit is found, and endeavour, whilst preventing its escape, to get it in a corner, where it can be conveniently disposed of, or, may be, it will be allowed to struggle to the aperture of a hole before its destruction is completed. As far as one can ascertain, this seems the probable way in which weasels capture rabbits in their burrows.

All similar animals to mice and shrews the weasel kills as it may come across, and rarely makes a regular hunt for them; but rats are particularly regarded as enemies, and a constant feud is kept up between the common brown rat—not the water rat—and the rapacious little vermin. In some cases quite a miniature war is waged, more especially when a colony of rats adopt some burrow at the side of a stream or lake, which the weasels, although not inhabiting, consider their rightful property, and naturally determine to occupy, if only in order to turn and keep out the rats. Where these latter named pests take up their quarters, and continuously burrow and destroy the banks of some river or pond, a small number of weasels may be obtained to oust the rats; they will, however, require similarly treating themselves when the first object is attained, otherwise the weasels will become a much greater nuisance than the evil they were employed to

put a stop to. Indeed, if this latter step is not taken at the earliest opportunity, the cure often proves far worse than the malady.

A determined destroyer of the comparatively harmless water-vole, the weasel is often looked upon as doing good in this direction, whereas, on the contrary, it is working destruction among the numbers of what is by no means a mischievous animal. It pursues the voles through the often long and tortuous ramifications of their burrows, made in the soft sandy soil of river banks, and should they take to the water it does not hesitate to follow them, as it is nearly as adept in the unstable element as the voles themselves.

Moles—the "blind and silky" moles—find in weasels their worst enemies and most ruthless destroyers; and were we as prone to look upon the mole as the most alarming nuisance some farmers do, we might well say that the weasel has at least one extenuating feature in its habits. Pursuing the mole through its dark passages under the soil, the swiftness of the weasel is rather impeded by their smallness, and so the two animals are about upon equal terms, as the mole can often, owing to its superior knowledge, dodge its pursuer. It is quite a common occurrence for the weasel (which seems to have rather a liking for the operation) to chase the mole in this manner, and we have unexpectedly caught weasels in the common mole traps, such a peculiar eventuality being rather a pleasing one, owing to its being what is termed something quite out of the common.

We have now carefully detailed all the principal methods

by which this "worthy" little creature obtains its food, and it will be seen, taking all things together, that there are now left but small birds and mice to enumerate as forming that part of the weasel's food the destruction of which is less antagonistic to our wishes. But there are few who would not lament that our song birds and the merry little feathered friends which enliven and beautify our English countryside should serve as food to such pests as the weasel and stoat, and it is our experience not to regard the weasel as a desirable animal to be cared for and allowed to multiply. Perhaps they are useful. We confess we cannot quite see how, when, or where, but when we do, no one will be more eager to acknowledge a mistake.

Respecting the fur of the weasel, it may be said that in the British Isles it never changes its colour in the winter months, but this is rather common in other countries, and has occurred in the north of Scotland and in England during very severe winters, although the change is never wholly complete upon the body, whilst the tail curiously retains its reddish colour similarly to the stoat. The fur is like that of all vermin, impregnated with a certain fœtid smell, but is less so than any of the other weasels, and has no power at all approaching that of the polecat, of emitting any such odour as mentioned in connection with that animal.

The name by which this mustela is known pretty generally throughout the country is "weasel," except in the western counties, where it is known as "white-throated fitchet" and "futterit," the latter being also employed in other districts but

sparingly. "Kine" or "cane" is a southern country name, while other local ones no doubt exist.

Between weasels and stoats there seems to be a sort of instinctive mutual understanding that they shall not work over the same ground, and although the two animals may be found to be pretty numerous on a preserve, they will rarely be taken near each other. This seems a curious trait amongst animals so very similar.

CHAPTER XXX.—GROUND VERMIN.

The Martens.

WE advisedly take the beech and pine martens together; because there seems to be some difference of opinion amongst naturalists as to whether the distinction which gamekeepers, trappers and sportsmen in general make between the white and yellow-throated martens is really a distinction of species or one of a common variety in the colour of different animals of one species. The chief apparent difference between the two animals is in the colour of the throat which in the pine marten is of a dirty yellow, while in the beech marten it is white. But, besides these apparent differences, there seem to exist many in the habits of the two animals which should go far to prove the existence of two species of the marten in the British Isles, at all times a scarce and little-noticed animal, but slightly known in England and rarely captured. Shy and wary, the pine marten never seeks to intrude upon the sight of man, and fearing to approach dwelling houses or other frequented places, it has not obtained the reputation of being a destructive creature, nor is its existence

known in many districts where it doubtless occurs. As its name implies, it is a tree-loving animal and of wonderful agility, being able to pass with silence and speed from bough to bough; obviously, then, its chief depredations would be carried on amongst birds' nests which it would rifle of the eggs or young as the case might be. Squirrels, too, find at all times a deadly enemy in the pine marten, often losing their lives to the superior cunning and silent approach with which the pine marten is endowed; not only so, but the new and complete nest of a squirrel is one of the most favoured retreats of these agile creatures. Poultry, too, often suffer sadly from the pine marten when it occasionally determines upon a raid, and rarely indeed do any of the inhabitants of a poultry house to which a pair have obtained entrance find it in their power to elude the vigilance of these marauders. Indeed, such are the bloodthirsty indulgences of these rare but comely little poachers that an instance is recorded ("reliable," of course) where two were known to kill and suck the blood of no less than twenty-one lambs! Such instances of marten ferocity are, however, now no longer heard of; and even if they do occur in the wilder highlands of our kingdom, there are but scant means of recording their occurrence. While in its nature it is not quite so destructive to game and poultry as the polecat or stoat, the pine marten mostly selects for its food young rabbits and hares just old enough to have commenced taking part care of themselves. It rarely, however, prefers full grown ones; but among young game of all sorts, either partridge, pheasant, grouse, or black

game, it would, were it more numerous, work considerable mischief. Its most important source of food seems to be the smaller birds, preferably the eggs to the birds themselves. Of course, the nests of game birds are liable to be despoiled, but they generally lie outside the haunts of this marten and suffer but little. The nests of magpies, jays, and wood pigeons are acceptable sources; and mice of all sorts, besides an occasional water rat, are food for the pine marten. The latter animals are, however, rarely systematically pursued with a view to capture, but are caught only when the chance may occur.

Contrary to the general nature of weasels, the pine marten produces but one litter of young in the year, about May or June, and drops but two or three young ones. The nest is generally situated in some hollow tree, and, a favourite selection, is the deserted nest of a woodpecker or squirrel. In the first-named case the female forms a bed of dry moss and leaves, of no very regular description, but owing to the situation, quite sufficient. When the woodpecker's excavation is adopted, first a little soft moss, &c., is deposited at the bottom, while the squirrel's nest is already a home of considerable comfort. The pine marten is in size a fairly large animal, but rarely exceeds about twenty-five to thirty inches from nose to tail; indeed, they average under this length. The colour is brown, very slightly tinged with the colour of the fitch, but is rather variable, while the throat, as before noted, is of a similar yellow-white to that of the stoat. The white of the pine marten's throat is, however, very irregular in outline, while that of the

beech marten is noticeable for the contrary. The hair of the tail is long and bushy, and of a certainly darker and duller tint than that of the body.

Slowly dying out on account of its continued persecution by and abhorrence of the presence of man, the habits of this marten have become as solitary as the retreats which it seeks in the wild, rough, and closely wooded districts of England and Scotland. Among the craggy hills of Wales it still occurs, and occasionally also in the Lake District. The martens generally live but in couples; and seeking out some obscure hole or crevice as a retreat, they sally out at night time chiefly, but also at early morning and dewy dusk, in search of such food as they may be able to discover without approaching too closely the dwellings of man.

Every year the pine marten (called also the "sweet marten" and "marten cat") is becoming scarcer, and will shortly be as rare as the wild cat itself. We have once or twice come across a marten on Dartmoor, but have failed to obtain any sufficiently close sight of one. We hope some day to obtain the creature itself when its whereabouts may be more defined.

Whether the distinctions existing between the last mentioned marten and the stone or beech marten warrant the recognition of two species or not is beyond our province to discuss, but until the contrary has been proved, we shall adhere to there being two, of which there is not wanting proof.

The stone marten is of more common occurrence than the one we have been describing, and its outward distinction therefrom is in being white under the throat,

and to a certain extent upon its breast, hence one of its designations, namely, white-throated marten; besides which, we may as well at once mention, are marteroy, beech marten, marteron, and, equally as often as the pine, the sweet marten—in contradistinction, no doubt, to the polecat, styled "foul marten." The scent so objectionably fœtid in the fitch, while being represented in both martens, is far from being noisome; on the contrary, it is not to all persons objectionable, while to others rather pleasant.

Resembling the above described animal in its habits, to a certain extent, the stone marten, however, seems rather to like hiding about in the near neighbourhood of man, and will often prowl round the buildings composing the shedding of a farm, and conceal itself in a barn or some such favourable shelter. In a hiding place of this kind will it remain, and at night, when all is quiet, it will issue forth and pay a visit, perhaps, to the poultry shed or house, and make a thorough search for any fowls which may have preferred to roost in any other place than that devoted specially to their accommodation. Farm fowls to the extent of some half dozen seem always to have such fancies, and these are a great lure to vermin.

More destructive than the less numerous pine marten, the marteron is of the bloodthirsty nature noticeable in the stoat; hence its predilection for poultry houses, and, should it gain entrance into one, it will, unless disturbed, set to work and destroy every bird the house may contain, and will not unlikely remain until the owner comes to visit the poultry in the morning. There are a good many instances, no doubt, in which an occurrence like this is placed to the

credit of foxes, "and yet there is no place where a fox could get in." Less solitary than the pine marten, and more generally open in its habits, the marteron has, to a certain extent, warded off more successfully that eventuality of becoming extinct to which these two handsome little animals seem doomed, and is, consequently, still of common occurrence in many parts of the kingdom. Preferring rather large and spreading trees to the close growing firs liked by the pine marten, it can be more easily observed, and is, therefore, more subject to danger; hence, perhaps, it is found on frequent occasions, pretty remote from the woods in which it should find its lair, and, moreover, in rough hilly stony places, often by the side of broken streams, and on the slopes of rough moorland common in less cultivated parts.

Its favourite haunt, however, is amongst trees, and especially those which are nut growing, such as the beeches, the most favoured of any, and probably influencing to some extent the marteron's usual name of beech marten. Being as expert and agile a climber as the pine marten, it proves nearly as destructive a vermin amongst eggs and young birds, and having no objection to leave its wooded shelter, it is even more marauding amongst the ground-placed nests of all our game birds, but probably most destructive to those of grouse and black game.

Mice of all sorts, and occasionally moles and water rats, show conspicuously in the list of its victims, and the squirrel is no less susceptible to the marteron's attacks than to those of the pine marten.

With the exception of the case above noted, when the marteron visits a farmyard, its depredations are generally

carried on in the early morning, and much in the manner of the stoat The particular expanse of wood in which the vermin has its lair will generally be nearly, if not quite, forsaken by those birds, &c., which may be liable to an attack, and it accordingly has to seek out other places and wooded ground in which to find its food. The marteron is not wholly confined to birds, animals, and eggs for its food, but is to a certain extent herbivorous, eating, seemingly with equal relish, hazel and beech nuts, which it extracts from their shells while they are still attached to the tree. Beech nuts are of course more to its liking, and are accordingly far more generally the food of this kind which it consumes.

When the marteron determines to construct a nest for itself, it generally selects some hollow tree, if possible, a beech; but as holes in these are mostly scarce, it is often obliged to adopt some other than its favourite tree. Ash and oak will be the most likely ones. If the former, the deserted nest of a woodpecker will probably be selected, as being easily made warm enough to shelter the young ones by means of moss, dry leaves, and the like. If, however, a hollow tree is discovered, the nest will be more carefully formed of various herbage, straw, and dry grass. At other times, when no tree hollow is discoverable, then some dry warm crevice in a rock, or the cavity formed between roughly piled stones, will provide a favourable site. The beech marten is considerably more prolific than the pine marten, producing, as it does, always five or six young at a birth, and having occasionally two litters in a year. This should certainly tell as an argument against classing the two

as varieties instead of separate species, and there are many other differences which the reader may have remarked in the accounts of the two animals.

There exists but little difference in actual length between the pine and stone martens, but in the various parts of the body there is considerable divergence; thus, the head of the latter named is larger than that of the pine marten, and has more the outline of the ferret's head, while the pine marten's resembles the stoat's. The legs, too, of this latter are larger and longer than those of the marteron.

The fur is of two kinds, similarly to the polecat's, and consists of a short, soft, and thick inner fur of light yellowish grey colour, the second long and hair like, ash coloured close to the skin, gradually developing to brown at the extremity, with just a tinge of the stoat's red visible in a certain light. The colour of the fur varies considerably on different parts of the body, in the manner usually noticed, darker on the outer and upper surfaces than on the inner and under, which along the abdomen is light and partakes of a greyish shade; while, curiously enough, the feet are darker than any other part of the body. The general appearance of the marten is that of a lively, active, and gracefully lithe animal, of considerable muscular power for its size, and capable of running or climbing at a quick easy-going rate. Apparently very intelligent, as far as an animal which has only instinct can be intelligent, it seems well able to provide for any emergency which may occur.

When attacked by a dog it sits up, and setting up its hair, half screeching, half hissing, and showing its teeth, it endeavours, whilst being well on its guard, to make itself

appear as fierce as possible. It is by no means an insignificant opponent for a dog, and never fails to make the best use it can of its excellent sharp teeth, strong jaws, and lithe body, well capable of active movement.

That the martens, more especially the pine marten, are slowly but surely dying out is perfectly evident, but they are still of fairly frequent occurrence among the rocky and woody districts of the kingdom; while in Wales and Scotland they are quite common, and, indeed, in parts of the last-named favourably featured country, regular means have to be employed against them to stop their depredations. An account of these means will be given hereafter.

CHAPTER XXXI.—GROUND VERMIN.

Wild Cats.

IT would scarcely be right to omit all mention of the wild cat, and, still less, to pass over those domestic cats which, not being satisfied with a comfortable and comparatively innocent life at home, find it more suitable to their taste to live a roving and destructive one in the woods and plantations. Before, however, taking some notice of these by no means uncommon pests, vermin of the worst type, we will glean a few particulars concerning what is correctly termed the wild cat, and which, like the martens, if but of rare occurrence in the more closely cultivated southern and midland counties of England, is not only occasionally found but is even common, in the northernly parts and throughout Scotland; whilst in Wales and Ireland, particularly the latter, it is comparatively well known.

The wild cat differs from the vermin we have already noted in belonging to a distinct race from that of the weasels, and the whole aspect of the animal itself is totally different, being exactly what its name implies

—a cat, and, moreover, a wild one, so named in contradistinction to the domestic cat, from which it differs considerably in colour and appearance. The colour of the wild cat is in its markings, and as far as variety goes, much more uniform. The fur is soft, long, and thick, and of a yellowish or sandy grey, streaked with a darker shade across the body and limbs, running at right angles with the line of the back, exactly in the manner of the tiger. Along the top of the back, or, rather, spine, the fur is darker, and streaked and spotted in a more irregular manner from end to end, finishing at the root of the tail, which is thick and bushy, and ends abruptly. It is not exactly a brush, but appears to have a tendency to become similar to that of the fox. A series of dark rings form the markings along the tail, which is tipped with black. The side stripes are fainter, and by no means clearly marked, compared with those on the back. In colder climates, the length and thickness of the fur increase considerably, and in some parts of northern Europe the animal is remarkable for these two characteristics of its coat. The total length of the wild cat is, without the tail, about two feet, the latter appendage measuring another 12in., so that it is an animal of no considerable size when we regard the proportions of some of our large domestic cats, such as are met with at shows. It is, however, quite big enough to prove itself a most obnoxious enemy to the game preserver; hence, probably, one of the many causes which will have contributed to its extinction in the plantations and forests of England, and eventually of

the rest of the British Isles, where it is most assuredly doomed.

There would, were they at all numerous, be no worse vermin than these animals, and the amount of havoc they cause amongst game and rabbits is astonishing; and again in this varmint do we find the characteristic of several of its congeners of killing more for the sake of killing than for want of food. But a further and still more inexplicable feature in the habits of the wild cat is the remarkable liking it seems to have for the heads of birds and animals, that being, with but extremely rare exceptions, the only part of its prey which it deigns to consume; and grouse are often found so neatly captured and killed, simply minus their heads, that it is a constant practice to serve them at table as if they had come by their death in a proper and, to us, satisfactory manner.

No bird or animal of any sort at all liable to the attacks of the more common vermin may expect to escape the clutches of the wild cat in those parts where it is still to be found; and it has certainly a more extensive list of victims than any varmint common in our game preserves. Of course, there is some difficulty in describing and noting the habits of an animal now so rare in the southern parts of the kingdom; and consequently these remarks must be taken as referring more to what *was* vermin in England and what *is* still such in Scotland, &c. St. John, one of our most acute observers of animal life in the British Isles, says, in his "Highland Sports," that the wild cat inhabits the most lonely and inaccessible ranges of rock and moun-

tain, and is seldom seen during the daytime. At night, like its domestic relative, it prowls far and wide, walking with the same deliberate and measured step, making the same regular and even track, and hunting its game in the same tiger-like manner.

The wild cat, however, is seen during the day when its resort is disturbed by anyone passing; and, having by no means the same fear of man that either the fox or other vermin may be possessed with, it readily attacks its disturber or assailant, when it will be found an uncomfortably daring animal. Even when caught and securely held in a gin, it does not hesitate to attack anyone approaching, not waiting to be assailed.

The wild cat, when in pursuit of rabbits or hares, does not employ the same tactics described as peculiar to the weasel, but rather searches for or hunts them in a slow and deliberate manner until, coming up with its quarry, it makes a final rush, and, killing the animal by biting at the head or throat, leisurely consumes the head and leaves the rest. Game birds, and such as may seem large enough to be worth the trouble of capture, it obtains by stealthily creeping up to them if on the ground, or climbing after them on trees in a wonderfully astute manner, taking advantage of every bough and branch that may provide any cover to its movements until, having manœuvred itself to the back of the bird, it slowly creeps near enough to make the final spring. Much in a similar manner to the common domestic cat do the wild ones sit and watch at holes from whence a rabbit or any of the smaller animals, such as mice and water rats, may be expected to

issue, snapping them up in the event of their being so unlucky as to put out their heads from the entrance of their retreats.

The haunts in which the wild cat prefers to take up its quarters and form its lair are, as we noted above, the wildest and roughest parts of the country, making its nest in the cleft of some rock or in the interstices among large and uneven boulders. Again, those cairns which are so common in the woods and moors of all parts of Scotland, built to commemorate some event or mark some boundary or track, are favourite places in which it finds a hollow suitable to its wants. They will also occasionally form their lair in the hollow of some tree, but the tree must be sound and the hole difficult of access. The wild cat, we believe, never burrows, but may sometimes, though very seldom, clean out some small rabbit burrow for its accommodation. The large nests, however, of some birds, which may be built low, such as a magpie's or crow's, will occasionally be usurped by it, but the nest must be commodious and very inconspicuous to prove of much attraction. Another kind of dwelling often chosen by this animal are those places commonly termed whisky bothies, met with along the "burns" which flow in all directions from off the moors of Scotland, and to which it is believed the vigilance of excise authorities used not to penetrate. However, this does not much influence the wild cat's choice, and, in these bothies very favourable corners and holes exist in which one might see a suitable lair. From such secure retreat as it may have chosen does it issue at sunset, and commence those depredations

in game preserves, and also in poultry yards, which assure its eventual extermination.

When it attacks poultry, there is, with the exception of the fox, no more ruthless destroyer of ducks and fowls, and an entrance having been once obtained in the poultry house, the inmates have little chance of escape unless something occurs to disturb the marauder. The peculiarity of only eating the heads, or, to speak more correctly, of only partially eating the heads of all it kills, is no less striking in the case of poultry. Further, this varmint seems to have a liking for lambs, and instances of their having been killed and carried off by it are by no means rare; indeed, there is no limit to what it will attack and destroy, and in numbers so large that if it be compared in this regard to other vermin, we think it will head the list.

Being rather a prolific animal, the wild cat stands a somewhat better chance of survival than the martens, the more so on account of its habits. About five or six young are produced at a birth, but sometimes less, and the nest is formed by the female, which is smaller and less brightly coloured than the male, in the usual lair, without search or wish for any other spot of more suitable situation. The young are littered about May or June, and come to maturity in about the same length of time as fox cubs. The cry of the wild cat is uncommonly weird, and of peculiar reach; indeed, the distance at which these varmints answer one another is very surprising; and its utterance at night, resounding through the silence of the Scotch moors, is a particularly unpleasant one, of an unearthly nature, and well calculated to produce ghostly, superstitious fears

in the uneducated peasant mind. The only instance we have heard of the wild cat's occurrence of late years in southern counties, was the shooting of one on Dartmoor about nine years ago, and if the description given us of a cat killed on the banks of the Dart four winters since be correct, and we have no reason to doubt it, then that was certainly also a wild cat, but as unfortunately the animal's carcase was flung into the river by one of the men who helped at its death, we can adduce no further proof as to the correctness of our surmise.

Although now so very scarce in England, it was till about thirty or forty years back so common that it was evidently a nuisance, and regarded as such, means being taken to trap, shoot, or kill it at every available opportunity. Before this time, however, it was no unimportant member of the beasts of chase, and was hunted in a regular way with dogs, in much the same manner as the otter at the present day, except the one being on land and the other mostly in the water. At this period, too, it was protected, or rather preserved, as only the wealthy were allowed the privilege of using it for sport, and we read that the fur was also of considerable market value, its employment being confined to certain classes.

Besides these, there is another class of vermin also generally called wild cats, but which are mostly either certain full grown domestic cats that have taken to the woods and become wild, or else the progeny of some sportively-inclined cat, which having deposited her young in some plantation, wood, or copse, has left them as

soon as they were old enough to provide for themselves. It is hard to discriminate which of these two is the more destructive to game and rabbits, and we are inclined to think that there is little to choose between them. Certainly, if the wild cat is extinct, these are not, and the "eligible opening" left by the *felis catus* is most excellently (or badly) filled by these wild-tame cats. When once these brutes commence their self-chosen artificial life, nothing will stop them, except, of course, powder or shot, or some other summary kill-and-cure, and the peculiar life they adopt renders them more wary and more difficult to get at every day that they live. Not only so, but they become seriously dangerous, and will not hesitate in some cases to fly at their aggressor. In one instance a great brute flew at the writer, without his even being aware of its presence. Cats which become wild and savage generally increase considerably in size, and become very rough and ragged as to the fur. Indeed, we have caught several the size of which must have been more than half as much again as an average domestic cat. Among the largest measurements we have is that of a cat shot which "taped" from the muzzle to the tip of the tail 4ft. 1½in., and stood at the shoulder 1ft. 4in. This one was killed some years ago in Oxfordshire, and is certainly a very fair example of the size to which they grow.

Which prove themselves most destructive to game—those cats which have taken to poaching, or those which, owing to being left by the dam to shift for themselves, have never known any other mode of life—is a point scarcely possible to determine, but we fancy the former

are generally more destructive to game, while the latter are worse enemies to rabbits.

These feline poachers prefer to remain, first of all, concealed in woods, and mostly choose some hole or nook formed by a rabbit burrow, at the root of a tree, or under a stone, in which to remain concealed or to sleep in during fine and warm weather; but, besides this, they always have some place to retreat to in case of need, and in which they shelter themselves from rain and cold. Uneven rocky land offers great inducements to these arrant vermin, and all such places as the polecat loves to frequent, but on a larger scale. Any plantation of young firs which are growing up thickly together will be equally likely to shelter them; or sand or gravel pits, should they contain brushwood and very rough copse over uneven ground (there are but few pits not so covered) are exceedingly favourite spots.

One marked peculiarity about these wild-tame cats is that they generally go very far away from their lair to choose their hunting grounds, and, unlike all other real vermin, are singularly fond of returning to the same field, wood, or wherever they may have been marauding, time after time, thus contributing much to their insecurity, and rendering themselves more liable to be caught.

They do not discriminate much as to the nature of their food, and everything which the real wild cat may destroy and consume is equally likely to be captured and eaten, or partially eaten and completely mauled, by the animal that might have been the comforter of some aged spinster during her declining years. But most open to

the attacks of the cats are rabbit warrens, and in this respect there is scarcely any greater nuisance than these runaways or one causing more trouble and expense to get rid of. For, owing to the size of the warren, and the absence to a certain extent of fear of human presence, they work in a more open and audacious manner than any other vermin, and although various means may be employed to catch and destroy them, fresh cats come to fill their places, and they become an unending and execrable annoyance to the warrener.

As to whether these cats breed or not to any extent, we have doubts, and although occasionally a batch of semi-wild kittens may be littered, it is of rare occurrence, and the young soon fall victims to snares and traps. That they do breed is certain, but no such result as a race of wild cats of the kind will ever be brought about.

We fancy that they do not care about returning to the scene of their early life, or to any place like it, and the poultry yard rarely suffers from them except in exceedingly cold and frosty weather, when other food is unobtainable; and having thrown off domestic ties, they rarely once leave rabbits and game for poultry.

CHAPTER XXXII.—GROUND VERMIN.

Capture of Stoats, Polecats, Weasels, and Cats.

THE five or six kinds of vermin whose general characteristics we have considered are in their habits so much alike, that most of the methods employed for the capture of one are more or less suitable for all. Of the means to be adopted there is some little variety, and while never omitting to shoot or kill a varmint, whenever occasion offers, about the only systematic manner in which a continuous and successful check can be put upon their depredations is by traps, and in some cases, snares also. But it may be necessary to remark that there are certain traps the use of which should be avoided, as practically useless, owing to their being so cunningly contrived that the secret of how to get caught in them remains up to the present moment totally undiscovered. Of these we shall take no notice, but will only recommend and describe the manner of employment of such traps as, from personal experience, we know to be of practical worth.

Foremost among the many traps adapted to vermin catching stands the common steel trap or gin, which, owing to its cheapness and suitability for nearly all situations and occasions, is usually adopted, while the others are used as secondary aids, or adapted to instances where they may be more likely to be productive of captures than would the gin. Everyone who may have to catch vermin is familiar with the old-fashioned steel trap, but how to employ it with success and in a systematic manner is not so well known, and but few persons, other than experienced gamekeepers and trappers, are sufficiently

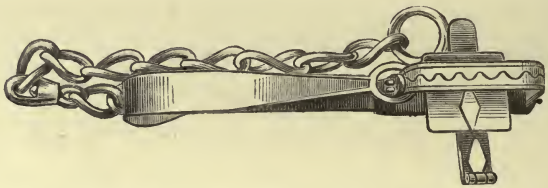


FIG. 12.—IMPROVED DORSET TRAP FOR VERMIN.

well versed in the niceties of the subject to warrant their taking upon themselves the destruction and keeping down of the vermin which may infest their preserves. By the old-fashioned steel trap must be understood the old-fashioned style of trap, with its latest important improvements, for the original steel gin was but a poorly constructed clumsy article compared to the highly finished excellent Dorset traps and other "makes" of to-day, of which we give illustrations at Figs. 12 and 13. It is not necessary that a trap should be large and heavy to be a useful one, nor need the spring be very stiff in order to last

long; on the contrary, it should be very elastic and turned low at the bow, so that there is no more trouble than necessary to form a place in which to cover the spring. For vermin it is advisable to be provided with two sizes of gins, the one lot (say, one-third of the total quantity) to consist of traps with 4in. jaws, while the remaining larger quantity should have 3in. jaws. All these traps must be of the very best manufacture (but not necessarily the dearest, as price is no criterion of the quality of traps), and should fulfil in every respect the description

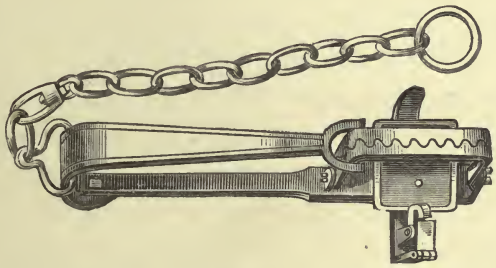


FIG. 13.—IMPROVED DORSET TRAP WITH SAFETY CHAIN.

of gin we are about to advocate for employment. By far the most important part of a vermin gin is the spring, which should be strong, but, at the same time, excellently tempered, so as to allow of its being pressed sufficiently low down by the simple grasp of the hand without resort having to be made to any large amount of force. It is riveted on to the back piece—that is the flat piece of iron forming the base of the trap—at about 1in. from the end, and bent over towards the jaws, which on one side are inclosed in a loop at the end of the

spring, that is rounded on all sides so as to give the jaws a full and easy play. These latter are always rounded on the outside, and are toothed in the now usually adopted manner, the sides being fitted so as to have about an eighth of an inch space between the teeth when the trap is "drawn" or sprung. It is important to give special attention to the spring and jaws of each trap, and to be sure that the force of the spring is not sufficient to cause the legs of a weasel or stoat to be cut right through, owing to the jaws being, perhaps, too closely fitted for the strength of the spring.

The catch of vermin traps requires, as a matter of course, to be rather tender, and should, consequently, be very carefully made and fitted very neatly, so that the step of such a light little animal as the weasel may discharge it as certainly as that of a rabbit. The gins which best fulfil the requirements enumerated are those manufactured at the Dorset works, Birmingham, by W. Shave, whose 3in. weasel and stoat trap is certainly as useful and excellent vermin trap as is made. He makes also a smaller one still, with only 2½in. jaws, but we prefer the former size for general utility. H. Lane, of Wednesfield, is the manufacturer of a 3in. trap, quite equal to the Dorset one. W. Bellamy, of Wolverhampton, is the maker of some not quite so highly finished, nor so well tempered, but which, at the low price he charges, are wonderfully good.

For the purpose of preventing the animal, when caught, from hobbling away with the trap, each one is provided with a suitably sized chain, consisting of about eight links,

and a swivel, terminated by a ring of about one-and-a-quarter inches diameter. These chains are in some traps well made, but we cannot say this of all makes, as in most cases they are nothing but make-believes as far as reliability is concerned, and we have often, when testing them, found them singularly weak and inefficient. In such cases the chains should not be purchased with the traps, but separately, and if one does not mind slight extra expense, it is a more advisable plan to order them from a blacksmith, being very careful to remind him to make them trustworthy, but not clumsy.

The small ring at the extremity of the chain is for what is termed the stake, by means of which the trap is fastened to the ground. These stakes are invariably a source of great annoyance and hindrance on account of their breaking and continually requiring to be replaced, having become rotten or useless. After having tried all kinds of sizes and shapes, we consider the following the most serviceable and least troublesome to employ: Obtain some well-seasoned straight ash boughs of as near as possible 4in. or 5in. diameter, and saw them into lengths of a foot. Then having split each length into 4 or 6, according to the size of the boughs, partly round and sharpen them off to a point from about ½in. from the top, leaving this part wholly untouched. They should not be made too small, but of such thickness that when the ring of the chain is put on it must be hammered down the last inch of the way, and will be overlapped by the part not rounded. If the stakes are handily made in this manner they will grip the ground exceedingly well, and be found

more serviceable than any other kind. There are some traps which are made with an iron stake attached to them, but they are not at all reliable, and although they save a good deal of trouble, they offer exceedingly little resistance, and often give no hold at all. In every case the wooden ones, as described, will prove more reliable—in fact, the best that can be obtained. It will be also necessary to have a fairly heavy hammer, with the flat head drawn out something like a small hoe. This will be found indispensable when vermin trapping, for a good many places occur where the gin could not be set without. The most extensive experience in setting traps of all kinds never warrants one in becoming slovenly. To get one's hand pinched in a gin is by no means a pleasant circumstance, and should a single finger get fairly in between the jaws, it is many chances to one that the finger will be broken, or, if not broken, nipped in so unceremonious a manner that the remembrance of it will not be among the "pleasant reminiscences" we often indulge in. To obviate any risk of such a disagreeable occurrence, one cannot set the trap in an easier and safer manner than as follows: Grasp the gin over the spring as near to the jaws as possible, and place the trap on the left knee (which should be slightly bent). This will give one complete power over the spring. Press this down as low as it will go, thus permitting the jaws to be laid open with the thumb and first finger of the left hand, and these, of course, keep as near the outside of the jaws as possible. Then, with the middle finger of the left hand, press the flap over the jaws and push the plate up from underneath with the third or fourth

finger, so that the catch can easily be made to fit in its place and retain the trap as it is. A little practice will soon enable one to set the gin as easily and safely as possible.

The complete setting of the gin is, however, more complicated than just fixing it as a trap, and requires further description. The manner of "tilling" varies, of course, according to the nature of the surroundings of a given spot. It must be borne in mind that the more cleverly the trap is concealed the better chance one has of obtaining a capture, and unless the covering placed upon the gin resembles very closely what the ground was before it was cut away for the purpose, the vermin will very quickly descry the disturbance, and, suspecting something dangerous, will be careful to steer clear. If the surface of the spot chosen as suitable be grass or herbage, commence by placing the trap upon the ground in the position it would presently occupy, with the spring and chain extended towards the right-hand side when looking at what may be termed the front of the site, or in other words, towards the right of that side from which it is supposed the vermin will approach. This done, drive the stake straight down until the head attached to the chain is about an inch below the surface of the ground. Then, keeping the trap extended so far from the stake as to allow a little play for the chain, dig out with the flattened end of the hammer a square hole just large enough to contain the jaws of the trap when open, endeavouring so to form the hole that what is dug out comes off in a little square; then further dig a sort of flap of turf along where the spring wire lies,

and scoop out the earth from underneath this flap. Now try the trap to this form, remedy any little inequalities that may exist, and hammer the ground flat in the square where the jaws will lie. It will also be necessary to cover the chain, which may be done by cutting a similar flap to that described for the spring. When the place is considered quite suitable, set the trap and place it in its position, which will necessarily bring the flap and catch of it opposite the trapper, then insert under the side of the plate, and over the jaws nearest, a small piece of wood, or a twig, to prevent the gin from what is termed springing or drawing. Of course, these vermin traps are all made to discharge very easily, and with but little pressure, and it is, therefore, advisable to observe that the covering should be done in a most careful and light-handed manner. As the trap is set in grass, it will be, of course, necessary to employ grass or herbage for covering purposes, and to do this effectually pluck some very short grass, and sprinkle it all over the plate and jaws, as well as the top of the stake, which is up to the present unconcealed, then with some small pieces of wood and twig gently flatten down the grass, whilst carefully sustaining the plate by means of the twig inserted beneath it.

When made on plain earth or on ground with a very scanty supply of grass, there must, of course, be some slight variation in the manner of setting. Instead of the more easily manipulated grass, earth has to be employed for the covering of the jaws, and in such cases, having covered the spring and chain in a manner which is too obvious to need description, we generally form a square for them. We

then obtain some nice fine earth devoid of stones, and heap round the sides of the jaws in little ridges, and while carefully preventing the plate from falling, smooth over the earth with a piece of stick, or more often with a knife. This is the most effective manner of covering which can be recommended in this instance. It must always be borne in mind that the trap, to be at all effective, must be quite unobservable by the vermin, and this result must be obtained by copying, as near as possible, the aspect of the spot before it was disturbed.

There are, of course, many places which are situated very differently from the two kinds described above; but the most proper means of concealment will suggest themselves as the cases occur.

Some, we know, recommend that a square be cut over the stake head when it is driven into the ground, that the chain may be curled up about it so as not to necessitate so much disturbance of the earth. We cannot see any superiority, but rather a disadvantage, in this course. Not only must care be taken in the setting of vermin gins, and, indeed, vermin traps, of all kinds, but, it should be remarked, the less the hands are employed about them, the less likely are the vermin to be scared away by any scent proving man to have been present; for, as mentioned in a previous chapter, vermin are not so much afraid of the actual presence of man as they are of traces of him. Some recommend the use of gloves; but, if vermin can detect scent at all, they are as likely to notice that of a glove as of the bare hand. We shall mention presently certain means to counteract the chance of any scent of a person being noticed by vermin,

which, from experience, we are able to affirm effects its purpose.

Vermin trapping with the gin can be employed to a reasonable extent throughout the whole year, but early spring, when there is an abundance of young birds and animals, and all through the winter, so long as the ground is not too hardly frozen or too wet, are the seasons most suited to it. Summer and autumn are not so favourable, and unless one takes considerable trouble about the traps little results are gained.

We shall at present notice together the stoat, weasel, and polecat, for, owing to the similarity of their habits, the means employed to catch one are in most instances equally suitable as regards the others.

Besides the gin several other kinds of traps are employed to catch vermin (*i.e.*, stoats, weasels, and polecats), of the utility of one or two of which we shall not fail to take notice. But for all-round systematic vermin trapping the gin will be found the most serviceable, as it can be employed advantageously with or without those baits which to other traps are indispensable.

The question of bait is one requiring some consideration, for in every case it must be something likely to entice the vermin, and, at the same time, not be unlikely to occur in the spot where the trap is placed. Pieces of flesh—more or less putrid, according to the fancy of the trapper—offal, fish, and the drawings of rabbits or birds and the like, are the most frequently employed, but we consider the last-named the most generally applicable and efficacious. Fish, we think of little practical value, and when we have

employed it, it has rarely proved itself very tempting. The half putrid remains of birds and rabbits, and any offal which may be obtainable somewhat resembling these, such as the torn-up remnants of a dead fowl or duck, are to be preferred. Besides the employment of a bait exactly at the trap, steps are to be taken to entice the vermin towards it, chiefly by means of drags or false trails, drawn out in radiating lines, so that any stoat or polecat at a distance of, say, ten or twelve yards, coming upon one, follows it up and is thus lured to the gin. Two modes of forming these drags are very effective. For the first a sheep's liver and lights should be obtained and chopped up very small, care being taken not to lose any blood. Mix with this a small quantity of oil of aniseed, and place it in some vessel in the sun until it smells "nice and high." This desirable result obtained, make a small bag of open-meshed canvas, and place the drag in it; having tied this up, draw it after you while the traps are being set.

A second method is to obtain a good quantity of dried or even fresh sprats, the former being preferable; pound them up in a mortar, and having placed them in well corked pickle-bottles, hang them up where they will be exposed to the sun for some ten days until they are thoroughly decomposed. The oil contained in the fish is thus obtained and has a particularly pungent odour. This oil should be rubbed on some cloth or flannel, a bunch of saturated material being dragged about similarly to the one first named. Some essence of musk or oil of aniseed added is perhaps an improvement.

When employing the steel trap, it will be necessary, as

a preliminary, to discover whence the vermin come whose capture is desired. Having made quite certain of this, the next information to obtain is the situation of the nearest rabbit burrow containing a small colony of these animals, or else some spot where the stoats, polecats, &c., as the case may be, would find plenty of scope for the exercise of their rapacious habits. When these vermin leave their habitation (of course they keep separate from and never come within respectful distance of one another's hunting grounds), they do so at one extremity, and wend their way towards any gap or gateway in the immediate neighbourhood, where they are almost certain to stop and rub themselves against the bars and posts, or perhaps against the rough tree branches which may represent a gate. This propensity on the part of the polecat, stoat, and weasel exposes them to considerable danger, for the opportunity is offered of employing a trap or two, with almost certainty of success. If the barrier be a proper gate, or such bars regularly fitted as often do duty for the same, then the gins should be placed under whatever may form the division (provided always that this latter be not too low) where there may appear to be the run of a rabbit or any similar track. A second trap should be placed at the end of a gate, between it and the post to which it is hung. If there be again a space between this latter and the wall or bank which forms the fence of the field, another gin may be put here; also, if an opening of a like nature exists, on the opposite end of the gate. Should there be a good clear passing place at either extremity, then one of the gins placed

there will be most likely to prove efficient. In order to till the traps in a satisfactory manner under the gate, it should be opened and fixed back; the person setting the gin should be, for preference, on that side of the gate opposite to the one towards which it opens. The actual setting of the gin is in no way different from the manner already described, but when it is set, a flat stone or two may be placed on the side opposite to the spring, which must be put parallel with the line of the gateway, and a few bits of briar bush and grass be placed on the opposite side to the stones, so as to form an artificial run under the gate when it will be again closed; by way of this run the vermin will perceive it is apparently most easy to pass. The gins set between the gate and the hanging post, and between this and the wall, should be placed one with the spring inside the field, and the other with its spring outside the gate, so that you offer on each side one fair trap.

These gins, as will be seen, do not require any bait, but the employment of one of the "drags" already described, and in the manner named, will be found advantageous, and likely to lure vermin towards the gateway, where the tracks come to a centre at the gap where the traps happen to be set. There are often in close proximity to gates and openings in hedges or banks some large stone, or perhaps a heap of small ones, deposited there to be out of the way. Such are likely places where vermin would come and rub themselves, which they do in much the same fashion as a cat. Here, again, we have an obviously favourable chance for effecting a capture, and one or two gins may be artistically

placed in close proximity to, and at the bottom of the most forward part of either stone or heap of stones. A varmint passing such an eminently suitable place for rubbing itself against is almost sure to get into difficulties with any gin which may be set. If this manner of tilling is relied upon, no bait is required, but if the spot be chosen for and considered a good place at which to use bait, the most suitable of those enumerated may be employed in a trap set accordingly.

Another suitable position for the gins is along a rabbit run that has been formed parallel to a hedge or bank containing rabbit burrowings, and about two or three yards out from it. There the traps may be placed right along the run at irregular intervals of from six to fifteen yards or so, but precaution must be taken to set them, not on the flat patches of the runs, but on that part where a rabbit, should it pass, would not put its feet. This particular must be remembered when placing gins on rabbit runs, for in any place where these animals are at all plentiful they would be continually getting caught; but should the gins be placed as noted above, eight out of every ten rabbits which may pass along the run will do so untouched, and without moving or throwing the gin. This will, however, sometimes occur, for the reason that one must fit the catch of the trap only sufficiently fast to keep it set, as it is not advisable, in fact is not correct, to set vermin traps as tightly as those intended for animals of much larger size, such as rabbits, &c., on account of the very slight pressure the tread of a weasel or stoat bears on the plate of a gin.

As baits for any traps which may be set against

stones placed, as before described, along hedge banks, the best to employ are either a portion of a rabbit, cut so as to expose the flesh, or of a bird of some sort, and it must be placed and fastened by some means on to the stone, or whatever it may be, in as close proximity to the gin as may seem advisable, so that when the vermin, having scented the bait, approaches to reach up to it, the spot upon which the trap is concealed may appear the most convenient place from whence the tempting morsel may be obtained.

The corners of a field which vermin may frequent are also by no means unsuitable places, and are in many cases very fruitful of catches if the traps be cleverly lodged. In such cases, of course, baits are most necessary, and we generally prefer some "high" smelling means of enticement, such as a piece of putrid meat, the paunch of a rabbit (including the liver), or, perhaps, a jagged piece of a dead fowl, or anything of a similar character to these. The bait, then, should be dropped as near to the corner as possible without being too exposed, and if the ground be pretty thickly covered with rank grass or such like herbage, a fairly distinct pathway should be formed for about a foot through it, at the end of which sort of artificial track the allurement may be dropped. In the run thus formed the trap should be placed with the spring, of course, at right angles to the parting, and it must be carefully set and covered. In a similar way, opportunity may be taken to place some gins upon the top of the hedge, and, under these circumstances, it often happens, when two hedge banks intersect each other at right angles, in a case where "conies" may

be fairly numerous, that two well defined runs will be formed along the tops. Such runs are much favoured by stoats and weasels when upon their marauding expeditions, and, if a bait be placed at the crossing, it is certain to be remarked. For this purpose a bird, such as a pigeon or small chicken, may be suspended in the air by means of a stick stuck in at the most suitable point, and, moreover, just sufficiently high to be out of the reach of either varmint. This will cause any one of these animals that may be passing to stop and try to obtain it, and hence it is obvious, if a gin be skilfully tilled exactly under the bait, a weasel or stoat cannot fail to be entrapped.

Dry ditches adjacent to the hedgerow, or if of some depth, running across a field, are also capital situations for gins, which may be placed at intervals of considerable length along the bottoms, a drag being employed to draw the attention of any vermin to the ditch. In some cases drains or dry watercourses for irrigating purposes pass under and through a hedgerow, and just in the centre of the portion of the ditch covered by the bank a trap may be carefully set, as likely to prove efficacious. Mouths of such little bridges or rather coverings of gutters, as are provided for the easier crossing of carts, &c., are very suitable, and, in some cases, fruitful situations for two traps, one at each extremity. In such case no bait is necessary.

If it be discovered that there are vermin located in a plantation or small wood, should there be an earth bank round it with a gapway partly filled with dead briars, thorn bushes, pieces of tree branches, &c., a run will probably exist through this conglomeration of stoppings, and a trap

may be set on the inner side of the gap at the extremity of the run, that is, where the run emerges from the briars; but if there is not already a track under and through the stoppings, one should be made by thrusting through a good sized stick along the ground; by working it well about in a skilful manner, a good and tempting passage through will be formed, just the style of entrance to its neighbourhood that either one or all of the favoured three would desire.

With respect to the situations described as suitable for the positions of gins, the employment of a bait has been put as optional, with the exception of those placed in the corner of a field. We now, however, intend specifying places in which the use of an allurement of some kind is almost necessary.

The worst of employing gins without baits is that many animals and birds, other than vermin, get caught in them, but baited traps seem considerably less liable to this, probably because the smell of the lure may not be so enticing to those for which it is not intended.

Though not absolutely necessary, it is a good plan at all times to carry two or three raw rabbits' livers in a tin box in the pocket, for the purpose of rubbing over the gins and at intervals the hands of the trapper. It is well known how animals can detect the recent presence of man, and, as, in these members of the mustelidæ, this faculty is more than ordinarily acute, a varmint would be very shy of the place where, besides detecting the scent of human beings, it might discover any suspicious looking disturbance of the ground. But should a savory whiff of rabbit liver come "floating o'er the

breeze," the stoat, or whatever vermin it may be, would endeavour to discover the source of the "aroma" with a view of further and more satisfying acquaintance with it, most likely getting caught in the steel trap placed there for its immediate discomfiture. Further, it is advisable, if convenient, to scent one's boots, and essence of musk or oil of aniseed are equally efficacious for this purpose.

When baits are used to lure the vermin into the trap, the situations and surroundings need not be so minutely considered as in other cases, and the distribution of the gins may be more indiscriminate. The most suitable spots are along hedges or banks near to or enclosing a wood, plantation or copse, at the corners adjacent to gates and gapways, about good sized heaps of large stones, and in and about small pieces of low rough covert. Further, all along low earth banks running right across some plantation, and similar dry ditches to those already mentioned; about the edges of any small pits that may exist; or, if a rough road runs through the wood, along the sides of this; besides any drives made for sporting purposes. All these are eminently suited for the situation of a number of vermin gins, and they have the further advantage of being easily found, so that there is not much searching about for traps.

The bait that we should prefer to use at these spots would be either a young and newly killed rabbit, or a bird of some sort, say, for preference, half a woodpigeon, a blackbird, or even a partridge, dead, of course. This should be firmly pegged down to the ground in about the position it would be when dead, and the trap set at its

back, a little above the shoulders, the spring pointing at right angles to the bird or rabbit.

It is not unadvisable, when trapping under these circumstances, to make a slight alteration in the manner of "tilling." Instead of extending the chain to its full length before driving in the stake, first place the trap in position, and, after the latter has been moved, drive in the stake first, under the place where the spring encloses the jaws, and let the spring lie upon the chain. Naturally the place hollowed out for the reception of the spring and chain must be made sufficiently deep to receive both with ease. With the exception of this slight difference, the actual setting is in every way similar to the other manner, but we must impress upon our readers the absolute necessity of covering the trap with the utmost nicety, and on no account hastening this process over in a slovenly manner. We now purpose to describe a further mode of covering the jaws and plate of the gin, which, while necessitating more than ordinary precaution in its manipulation, is, except during extremely hot weather and on places much exposed to the sun, in no way superior to the manner described above, but, under the conditions named, is perhaps preferable to the more general method.

Having placed the trap on the ground, and noted its outline, cut out a square just large enough to contain the jaws, as already described, and be sure to obtain the piece of turf whole which comes away. Then set the trap, and cover the spring, &c., in either of the indicated ways. Next, with a knife, cut away the under surface

from the square of grass until this is as thin as it may be without causing the slice to fall to pieces. Then, whilst carefully sustaining the plate, with a knife, or by other suitable and safe means, place the square of grass neatly on the plate of the gin. It should be of such a size as to just fit within the square of the jaws; then, by pressing the grass upon the other side towards the inner one all round the trap, the necessary covering is completed, and the twig used to support the plate may be drawn away, and the "tilling" is accomplished. This mode is, however, a more risky one as far as care for the fingers is concerned, as the trap must be most carefully set.

The position of the bait is also an important matter, and whenever it is placed upon the surface of the ground it should be securely pegged down, so that the vermin attracted to it may endeavour to obtain it by pulling first one side and then another, so as to bring it into the trap, which it would not do were the bait unsecured. Sometimes it is advisable to suspend the lure on a tree, and in these instances its height from the ground should be just sufficient to prevent any varmint from attaining it except by standing where the gin is concealed.

All the methods above described for capturing vermin comprise those suitable either for the stoat, weasel, or polecat, and according to the locality, appearances, and general surroundings, it may be judged which animal is more likely to be captured.

Weasels, however, will most probably be caught when the bait consists of eggs, but an occasional stoat may fall

a victim. Eggs may be employed in all the positions named, except the last, and for economy's sake the bait may sometimes be feigned. Reserve all egg shells from the breakfast table, fill them with moist clay, and pin into each a small peg by which to stick them up on the ground, three, four, or five together ; afterwards form a rough sort of nest round them and set one or more traps close to the nest. Another method to employ eggs is upon the sloping bank of some pond or stream. In this case cut a good large sod, one with rushes growing on it, and of about 2ft. by 18in. measurement, and having placed it at the edge of, and projecting into, the water, form at the further extremity a sort of small nest, in which deposit, say, three eggs, and "till" the trap on what seems the most likely part of the sod, covering it up in a careful manner.

When the capture of vermin along the sides of water courses and rivers is desired, somewhat different methods must be observed. Of course, conspicuousness of the bait is the chief thing, and its situation where most likely to be discovered the next. Such hedgerows as run down nearly to the edge of the water, and then fall away in height rather suddenly, may be chosen; while any large and noticeable boulder upon the bank, standing pretty clear of others or upon a high and overhanging part of the land, may also be decided upon for a trap. In such cases it is optional to employ fish as the lure, and if a rather stale unsalted haddock or two can be obtained, pieces of these may be used with a fair amount of success. Polecats and stoats are generally captured about water,

and if the ground at the side be rocky and worn from the effects of overflowing, the former are sure to pay visits to ground so admirably suited to their tastes.

Besides those methods already enumerated, a further manner in which to employ the gin for vermin capture is at the outside of rabbit seats, substituting, however, a dead one in place of the owner or usual occupier of the place. This is often a very productive mode, and is specially suitable in fields where patches of gorse have been allowed to grow up, and in small pieces of sandy common in which the furze is the only covert. If some slight search be made in these latter, several places will be discovered where certain rabbits have formed seats under small but thick set bushes of the gorse. In those of sufficient length for the method to be practicable, a dead rabbit should be propped up to represent one sitting in the retreat, and a trap set at the entrance and one at the back of the small sort of tunnel which exists. In most cases, the vermin, seeking capture of the rabbit, will be trapped in the one set at the back, so that it is not advisable to omit the second tilling.

A modification of this, and one eminently suitable to small level openings in a plantation, is to form a small oval enclosure of little branches, preferably of thorn, sufficiently closely placed to prevent the ingress of vermin except at the openings left. The sides should be about a yard long and 18in. apart at the widest, and ought to slope sharply towards one another at each end, leaving two narrow entrances, just about the size which a gin would nicely fit. In the centre of this fix up as bait either a dead bird, rabbit, or some other temptation to induce

the vermin which may have detected the lure to endeavour to obtain it, which desirable end can only be achieved by its passage through one of the narrow openings; each one, however, must be carefully provided with a neatly tilled gin, ready to accomplish the discomfiture of any intruder. This mode requires some amount of care and trouble, but is sufficiently productive of good results, when the site is well chosen, to warrant its adoption in such places as the trapper may deem satisfactory.

Parks, and especially those surrounded with close palings, are favourite localities for vermin, and many opportunities round these wooden fences are offered for employing traps. The kind of paling alluded to is that formed by thinnish lengths of boards made to overlap one another longitudinally, and nailed on to square lengths of wood which run along from post to post about 12in. from the ground. Vermin are extremely fond of what is generally termed running the posts, which consists of jumping upon these horizontal pieces, and, while scuttling along them, rubbing themselves against the inequalities formed by the construction of the fence. Now, if some unbaited and even uncovered gins be placed at rather wide intervals along the wood described, when vermin exist to any appreciable extent in the inclosure, they are sure to get into the traps so placed. Of all the vermin the beech marten is most addicted to this practice, and next the polecat and stoat. Further, if a deep cut be made into the gate post about 1ft. to 18in. from the ground, forming a sort of platform in the side of the wood, and a gin be here placed, a varmint is almost sure to leap up if the hole be noticed.

Of course, it is a very difficult matter to mention all the various particulars which go to warrant the setting of a trap in a particular place; but we hope we have enumerated the characteristics of some of the most obvious spots. In collecting them we walked over a preserve, and noted them down as they occurred, this seeming the most likely way of making the suggestions useful.

CHAPTER XXXIII.—GROUND VERMIN.

Capture of Stoats, Polecats, Weasels, and Cats (*Continued*).

WE have now mentioned all the more practicable uses of the gin when employed for the capture of vermin, and will pass, therefore, to traps of different and, in some cases, more complicated construction, nearly all of which kill when they catch. Amongst these, the cheapest, most useful, and successful, is what is called the "Figure of Four Trap."

This trap derives its name from the fact that a flat heavy weight is supported by an arrangement of three pieces of wood so cut and fitted together that they resemble a 4, and from the end of one of which pieces is suspended a bait, so that the slightest touch from any varmint causes the whole to collapse, the result being that the luckless animal, whatever it may be, is crushed by the falling weight.

There are one or two different ways of making the 4, varying, however, very little one from another, and of very little difference in working value; but what we are inclined to consider the best manner in which to make it is as

follows: The trap consists of three unequal lengths of wood (see Fig. 14); the longest piece (*A*), named generally "the stretcher," should be 13in. long, ½in. wide, and ⅜in. thick; it should have three notches cut in it, about ⅛in. deep, two close to one another at one end, and the other cut in a slanting direction, 4½in. from the last of the two at the extremity; the centre notch, it will be observed, is cut slantingly, and at the same time in an opposite direction from the other two. At the other end of the piece a hole is bored by means of which the bait is secured. (*a*) shows

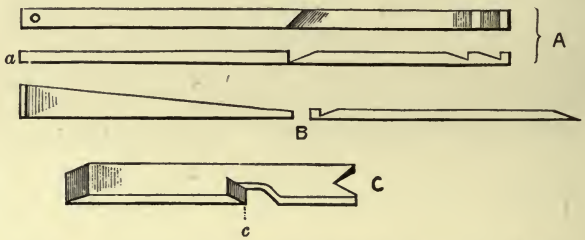


FIG. 14.—PARTS OF FIGURE-OF-FOUR TRAP.

the manner of cutting the notches. The second piece of wood, termed "the slanting stick" (B), ought to be 6½in. long, ⅜in. wide at the smaller end, gradually increasing to 1in. at the other. At this end cut a notch about 1in. from the extremity, varying the distance more or less, according to the respective heaviness or lightness of the stone employed for dead weight. In order to cut the slant upon the correct side, hold the piece of wood with the notch underneath, and resting upon its point, and cut the slant on the right-hand side. The upright should be 7in. long over all; from the forked end to the notch 3in. The notch itself

should be ½in. deep, and to cut it neatly and correctly make a slit in the wood (at *c*) ½in. deep; then having placed the piece upon its edge, cut out the notch on one side of the slit and the curve on the other. The correct manner of cutting and the position of the notches is best seen by reference to the drawing.

The other essential in this trap is either a good thick slate or a flat stone, about 18in. square, or if these be not obtainable, a board cover may be employed, but this will obviously require weighting. Of course, either of the former is infinitely to be preferred.

To set the trap, first attach the bait to the stretcher (A), by a piece of wire, allowing it to just hang on the lower side. It is not advisable to employ any thick hard bait that will prevent the cover weight falling flat upon the ground, otherwise the vermin may be unhurt and squeeze itself out at the side. Next place a piece of slate, or ă flat level stone, about two or three inches wide—it need not be shaped in a regular manner, and for preference otherwise—upon the ground, just about on the line where the outside edge of the trap will rest when fallen. Upon this, and with the side shown in the drawing to the front, place (C), then put the notch of (B), on the point of (C), the small end outside the notch in the slanting stick alone supporting the stone or slate which may form the cover. Take up the stretcher (A), and fit the point of the slanting stick (B), into one of the notches of the stretcher, whichever may seem most suitable; place it transversely to the upright, fit the slanting notch to the notch (*c*), in (C), and having found by gently releasing hold, that all the pieces catch together, the figure of four is formed

and the trap remains set, as shown at Fig. 15. The directions given regarding the trap will be found most saving of trouble, and if they be carefully followed, the setting will be accomplished at the first endeavour.

Naturally the ground must be level, and it must further be observed that it is desirable that the surface at the open end should slant down a little, otherwise the stretcher may be broken by the weight of the falling cover. No more

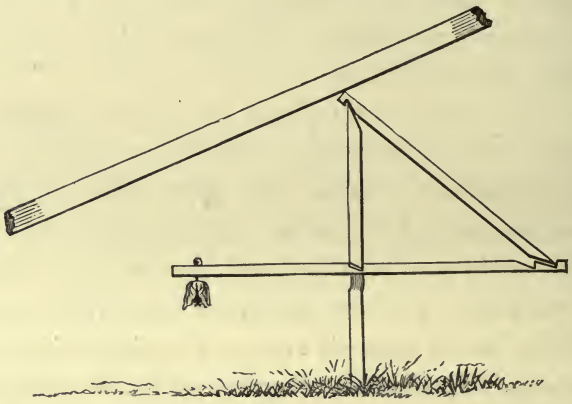


FIG. 15.—FIGURE-OF-FOUR TRAP SET.

complete and instantaneous collapse than that of the "four" when the bait is touched can be devised, and only exceptional cases of the parts jamming occur—in such instances, frost or wet is invariably the cause. This trap is of course one of, if not, the cheapest that can possibly be made, and as large a quantity as may seem necessary can be provided, the cost being really nominal, and the only trouble in making is the correct and careful cutting of the wood for the figures of four. The best wood is well seasoned ash or deal, as these

lend themselves more easily to manipulation than others. What is gained in the handiness of the deal is compensated for by the superior quality of the ash. When making a quantity, a plan to be recommended is that twelve of each piece be made at a time, and by forming and cutting the wood into suitable lengths, time may always be gained, not to mention the superiority that will be apparent in the work.

The pieces, of course, must not be left white, but coloured to be in unison with the surroundings, and for this purpose a good rub over with mud is necessary, besides which a little smearing of rabbit's liver, or other suitable allurement, should be given just before setting the trap. For baiting, a piece of flesh of some sort or other ought to be chosen; portions of the neck of a chicken, or similar sized bird, are most excellent, and prove at all times a capital lure.

Referring back to the measurements given, those stated are the ones best suited for stoats and weasels, and do not, we opine, admit of variation for the animals mentioned. But for polecats and martens the height of the upright may be increased, the additional length being added between the foot and the notch, say two inches, but not more. Such variations as exist are similiar to the original make, but improvements give nothing better than the pieces as described. In practice, the trap is not a great favourite of ours, and we rarely use it as a chief trap, but make it a secondary one to be placed out of the usual round. It is inconvenient and difficult to hide, besides which so many animals and birds other than vermin will set it off; but as a trap to be employed in plantations, and in places where people, not of the same opinion as oneself regarding the

necessity of formalities about the ownership of well-made gins, are in the habit of passing and repassing, it is of considerable use. A figure-of-four offers no inducement for removal.

The "most likely places" for these traps exist along hedgerows where a rabbit-run up to a burrow in the bank passes under briars or furze. Here the engine of destruction may be deposited with every chance of success, while all similar spots in wood and covert may be equally well adorned. Nearly all the spots mentioned as suitable for the gin are equally so for the figure-of-four, and will recommend themselves as they occur.

The next trap on the list is what is generally called the "High Elms" trap, and one quite as efficacious for the capture of vermin, yet entailing some little expense, being of a more complicated nature. However, any shortcomings on this score are amply compensated by the excellence of the trap, besides the extent to which it can be employed, and the wear and tear it will sustain warrants its adoption as one of the best means of capturing vermin. Some slight variations are made in its formation by different persons, but the system upon which this dead fall works remains in every case unaltered. The annexed drawings represent the component parts of the trap, and, as it cannot be purchased, we shall describe each in detail, in order that its construction may be the more easily accomplished.

Fig. 16 represents the floor or bottom of the trap, which requires to be 22in. long, 14in. wide, and about 1in. thick. It must be made of two pieces of board as shown, in order to admit of the trigger being fastened on to one edge

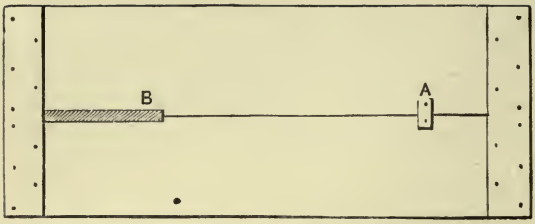


FIG. 16.—FLOOR OF TRAP.

FIG. 17.—TREADLE.

FIG. 18.—STANCHION.

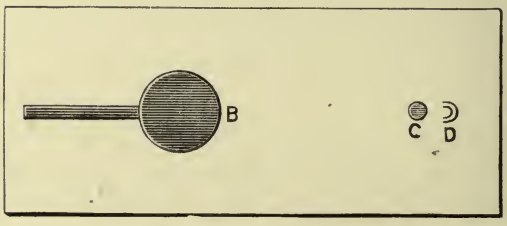


FIG. 19.—COVER OF TRAP.

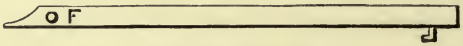


FIG. 20.—LEVER.

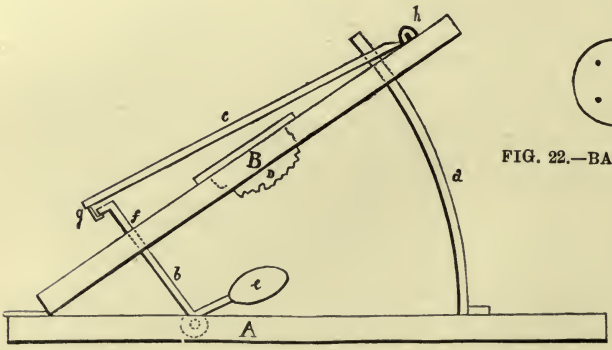


FIG. 21.—THE "HIGH ELMS" TRAP.

FIG. 22.—BAIT PLATE.

by means of a screw. For the admission of the treadle (Fig. 17) a strip is cut out at B, 9in. by 6in. long, and ½in. wide. The two pieces of wood are nailed together with two strips, each 2in. wide, and ½in. thick. A is the spot where the stanchion (Fig. 18) is screwed on.

Fig. 19 is the cover or lid, which may consist of one piece, or be made of two, similarly to Fig. 16. It requires, however, to be 2in. shorter, but is equally broad. B is a hole about 3in. in diameter, and ought to have its centre 4½in. from the back end of the cover. A piece ½in. wide is cut out from this hole towards the edge, in which the neck of the trigger may work. A hole is provided at C for the stanchion to pass through without touching the sides. D represents a staple, into which the end of the lever fits. This staple is sometimes dispensed with, and the means shown in the drawing of the trap set is substituted, namely, a nail is driven sideways through Fig. 20 at its point, and the two projecting ends are held by two staples.

Fig. 18, the stanchion, must be of ½in. round iron, flattened out at the foot, as shown, and bent to a radius of 15in. About ½in. or ¾in. from the opposite end a pin (E) about ¾in. long must be riveted on, so as to stand out at right angles upon either side. Its thickness should be such as will easily fit the hole bored through Fig. 20 at F. The stanchion must have two holes in the foot, through which it can be screwed down to the floor at A. Fig. 17 is the treadle, measuring from the notch at G 4in., and the rest 3in. The plate is of sheet iron, round, and measuring 3½in. in diameter; it must be riveted on at H. Sometimes it is formed as shown in Fig. 21 by the

dotted outline in A. The lever (Fig. 20) is of wood, ½in. thick, ¾in. wide, and long enough to reach from the staple (D, Fig. 19) to the notch at the top of the trigger. Two inches from its extremity is a hole (F) for it to slip on to the pin (E, Fig. 18) in the stanchion, and at the other end a nail or bent wire to catch the notch of the trigger. Fig. 22 is a round piece of wood or iron 4in. in diameter, with four holes drilled or bored in it. To this is tied the bait. Fig. 21 is the trap when set. The floor and cover are hinged together by old stirrup leather, or as desired. In order to set this rather complicated trap, first fix the lever upon the pin of the iron stanchion, raise up the cover till the end of the lever will nick under the staple, press the other end down and let the catch of the lever fit with the catch of the trigger. The lid should now be weighted with stones; tie on the bait and simply drop it on the hole, with the lure downwards. The action of the trap is now obvious, for the vermin attracted, reaching to smell or endeavouring to attain the bait puts its feet upon the trigger plate, which naturally causes the weighted lid to fall and crush it. Some nail on to the cover four narrow strips of hoop iron; this can be done if wished, its object being to prevent the vermin if only slightly caught from squeezing out at the side of the trap. It is advisable, of course, to colour the trap with mud, or to stain the wood with tan. We have also seen that a mixture of ½oz. alum, 1oz. burnt umber, 1½oz. of lampblack, dissolved in about a pint of porter, used as a paint, gives it the colour of an old slate. The catches forming the actual trap require a little oil now and then to prevent rust and consequent jamming. This dead-fall can be

employed anywhere, at any time, and its use in nearly all the situations appearing most adapted to it will probably, or rather, certainly, be marked by its great efficacy as concerns the capture of stoats and weasels, besides polecats.

Another trap that may be brought into use for the purposes under consideration is what is known by the rather imposing title of "The Patent Break-Back Rat Trap." The smallness of the make, however, precludes its employment except for weasels, but if a handy ironmonger happens to be in the neighbourhood, he will probably be able to turn out a dozen rather larger upon the same principle, and if practical instructions be given him, with such differences as to improve the trap for the purposes for which it is required. Often in country towns. under the name of ironmongers, there are men far superior to the London men of this trade, and their cleverness in turning out little things like this is certainly much to their credit compared with the ignorance some display in the metropolis. When the "break-back" is used it must be covered over upon the top and hidden as much as possible, but let us advise great caution when doing this after setting it, for it is an uncomfortably sharp article in its action. The situations for it do not vary from those of the gin, but we shall again call attention to it for use in spots other than those indicated here.

Its action is something like that of the High Elms trap, but instead of the cover falling, a spring wire raised to the lid is held there in suspension by a sort of trigger, which is released by the vermin touching the bait,

when the spring flies down, and, as the name of the trap implies, breaks the back of the animal. A very excellent mode of varying this trap so as to be more adapted for vermin catching is, while making it twice as large, to substitute for the hook upon which the bait is hung the trigger arrangement of the High Elms trap.

Again, the "New American Rat Trap" may be used for vermin to a certain extent, but we should not like to advocate the use of it at all, but just mention a particular manner in which it may be employed with a chance of success. The principle upon which these traps are made is pretty well known, and needs no further description more than that two half circles of strong wire are sprung together by a spring, which is released by the animal to be caught touching the bait upon the triggers; but, further, it must be observed that this touching must take place only from the front of the trap, or otherwise it will not "go off" at all. Now, this peculiarity, of course, spoils the trap, except for employment in one particular manner, which is as follows: A reference to the drawing, Fig. 23 shows the trap set. To *a* a piece of thin chain, or two or three strands of picture wire twisted, must be attached, say the length about 6in., and a stake of some length, say 1ft., similar to the gin stakes, firmly secured to one end. Fig. 24 represents the trigger of the trap as working at *b*. The point of this at *c* must be bent in the direction of the dotted line, so as to form a hook. Upon this fix a bait of not more than 2oz. weight. Then, to set the trap, choose some spot upon the side of a wall or hedgerow, and, having driven in the

stake, let the trap hang down. When this is done, see that it is in a good position, which, being satisfactory, set the trap by pulling apart the jaws, one with each hand; with the thumb of the left press over the flap wire, which will enable one to hold the trap set by the left hand only; with the right now adjust the trigger, &c., and very carefully put the trap in its place with the left hand, holding it with the thumb above and the fingers

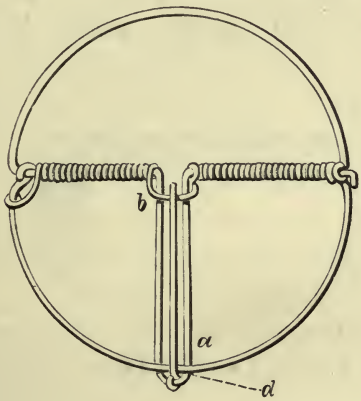


FIG. 23.

FIG. 24.

NEW AMERICAN TRAP.

underneath at about *d*. If there be any long slight herbage or grass outside, it may be neatly pressed over the edges, otherwise further attention is superfluous, beyond the employment of a drag to attract the notice of the vermin.

It will be seen from the description given of the setting that, when anything touches the bait, its so doing causes the trigger to fall, and the upper jaw (in this case) flies

over and clasps whatever may be the cause of the trap springing—if a varmint so much the better.

At Figs. 25 and 26 we give an illustration of the Dead Fall Trap, which is very useful for vermin of the stoat and weasel kind. It has, however, another recommendation, namely, that it is essentially a box trap, but kills its capture outright. The trap or box should be 3ft. long, 11in. high, and 4in. wide (inside), the wood used being deal, except for the treadle, for which oak is a necessity. The treadle, *a*, is 1ft. long and $\frac{5}{8}$in. thick. It is really

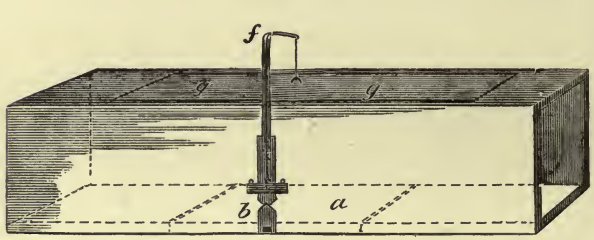


FIG. 25.

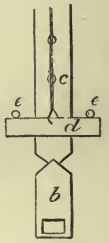


FIG. 26.

THE DEAD FALL TRAP.

a swing door upon the floor of the trap, and works upon brass pins about the thickness of a quill, which are driven into the treadle exactly at its centre. The holes in the side of the trap in which these pins work should be faced on the inside with a small brass plate having a hole through it, the brass plate to act as bearing for the pins. On to one of these a flat piece *b* of iron is riveted, perfectly upright and immovable. *C* (Fig. 26) should be of bell spring about 6in. long, and pointed at the lower end. It is screwed on to the side of the box immediately above *b*, so that the latter overlaps the former by about one-eighth

of an inch. *D* should be a piece of iron or brass, the opposite metal to the two pegs *ee*, and has a hole in it through which to attach the string holding the weight. *F* is a piece of iron having a running pulley set in it at its curved end, it is fastened on above the bell spring and has the form of a miniature davit. The weight *g* should be about 3in. wide and 2ft. long. It is held up by the string fastened to a staple in its actual centre. To set this trap press the spring *c* down, and the point of it just beneath the point of *b*, then set the weight in position on the top of the trap, placing the string over the pulley, down the davit *f*, and fix the piece of metal at its end, beneath *ee* the pins. Anything running through the trap presses the treadle down on one side, the bell-spring is released throwing out *d*, the spring being then free, the weight drops instantaneously and crushes the animal which sets off the trap.

We have made many modifications of this, all on the same principle as far as the treadle and catch are concerned, replacing the weight by an arrangement for dropping a door at each end and so catching the animal alive; also one with a single door of similar kind.

The means of capture for the wild cat are of considerably more importance than those for the more common and smaller vermin. Owing to the nature of its habits and the secluded localities which it haunts, it is a much more uncertain animal to deal with, and the exact neighbourhood of its lair is often only determined after long and painstaking search. The extensive nature of the destruction it works, more especially amongst game, necessitates imme-

diate steps being taken either to capture the varmint or oust it from the particular wood or whatever it may have adopted as its place of concealment. Suffice it, however, that its whereabouts having been satisfactorily determined, the next step is to set traps for its discomfiture and capture.

For this purpose the gin may be used, but the common vermin gin is too small, and even the 5in. rabbit gins are by no means too large. As these, however, are more generally obtainable than any larger sized ones, it will probably be found more convenient to employ traps of this kind. The actual setting of them is in no way different to that prescribed for the smaller ones in a former paragraph, but the choice of situation is of much importance, and besides allowing of considerable diversity is not so easily described, for the natural haunts of the animal are mostly chosen on such rough and thickly covered ground that it is difficult to determine which are the most likely and, at the same time, most open spots. However, we may suggest such as the foot of large boulders free of overgrowth; on any little open space amongst thick brushwood; against a wall standing out well defined or adjacent to some fallen tree or tree stump; on the banks of streams, and any others which, from the description given of the haunts of the wild cat, may seem to recommend themselves as suitable. For bait, the strongest lure that can be obtained must be used, and, if dead game such as grouse can be obtained, the better. A jagged rabbit may also be employed, or a portion of a fowl or duck is by no means a bad sort of bait; in fact, something large and high, and, if

possible, feathered, is the kind to make use of, but drawings and the like are not of much efficacy. It may be necessary to mention, with regard to the setting of the gin, that careful manipulation is most necessary, and that the stake should be full sized and hold very tightly when driven in; otherwise, if a wild cat be caught, its great strength and the plucky way in which it works to become free will often release the ordinary stake; even one which may appear immovable soon becomes loose owing to the lugging and wrenching it may receive; and, further, the spring must keep the jaws very tight, not necessarily touching, but should certainly not allow more play than a quarter of an inch. When one wild cat is caught it is a good plan, likely to lead to the capture of one or two more, to peg down the dead body on some small open in the neighbourhood where the vermin have their haunts, and to carefully set some five or six gins all round it. Taking advantage of the habit wild cats have of finding out dead of their kind, and walking round, and even rolling on the carcase, one often succeeds in taking one or more by means of this expedient.

The other description of vermin cats are much more easily dealt with than the real wild cat, and are comparatively easily trapped. There is, however, of course, the usual amount of care and trouble necessary, for these cats will be found to be especially wary. Besides the ones which may have taken to poaching as a permanent means for support of life, there are many, very many, cats which, while apparently strongly attached to the fireside during daytime, and when their presence or otherwise, as the

case may be, is liable to be noticed, have, however, an equally strong attachment to game preserves by night, when their actions are unobserved. These extremely knowing pussies are as great a nuisance as those first mentioned, and have a peculiar habit of all coming to the same preserve, or, at least, to the near neighbourhood of it. They have been known to come several miles, and we have caught cats of this kind whose homes were situated really at a wonderful distance from the scene of their discomfiture. The injury that cats chiefly cause is amongst rabbits, &c., which are being systematically trapped, and, besides these, foxes and dogs are equally destructive. For the better determination to which animal's credit the mischief may be placed, it is necessary to mention that a cat never takes a rabbit out of a trap, but partly or nearly wholly consumes one, leaving the jagged remains in the trap. Further, a dog eats one or two entirely, and buries the remains, which it may subsequently obtain. A fox takes a rabbit from a trap, and, having partly eaten it, leaves the remains lying near; this it continues to do until its hunger is appeased; after this it carries them off.

Besides this kind of mischief, cats are quite capable of catching partridges, &c., and they are particularly fond of traversing rabbit burrows when the burrows are sufficiently large or the cat suitably small. When, however, these two provisos do not occur, cats will often entice kittens away, when these latter work much like ferrets. We have often watched these operations, and on one occasion shot two rabbits bolted by kittens. For the sake of whom it may concern, we subsequently shot the kittens also. Conjectures

as to the cause of their disappearance were rife amongst our household.

For the capture of cats, rabbit gins may be employed, but as for wild cats, they require a firm and tight holding stake, and the wider the jaws are apart the better the "eligible opening." When it is desired to catch a cat that has become obnoxious under the circumstances above related, the rabbit found partly consumed may be employed, but must be left in exactly the position it occupied when found, and the gins be neatly tilled round it; about four or five will be amply sufficient if the rabbit be not against a wall or bank, when, in such case, two will suffice. For the general trapping of cats the most suitable places are along the outside of plantations enclosed by hedgerows; at the corners of gateways, along drives cut through a covert, or under the banks of roadway cuttings; in gravel or stone pits, or any places of a like nature where the inside covert is close. The setting is similar to that for vermin, but care must be taken to choose such a spot beneath where a bait will be placed as appears most convenient for the cat to stand upon in order to reach the lure. For this purpose any of those mentioned will do, but for preference a rabbit, and moreover a small one, fixed up about 18in. above the trap. The best way is to peg it into the wall, allowing the head to hang downwards. The drags described in a former paragraph will be found not only very useful, but exceedingly efficacious in enticing cats to the trap. Tame cats have an extraordinary liking for the scent of valerian, and this liking does not desert them when they indulge in poaching propensities, it always proves a strong inducement to forget that caution

necessary to their safety, and hence its employment when trapping possesses a twofold advantage, for besides being an excellent lure it is, moreover, of great use in putting them off their guard. It is, therefore, certainly advisable to obtain some tincture of valerian and place a few drops (two or three will suffice if the tincture be good), upon each bait, besides a drop or so upon the plate of the gin when set. It is also sometimes employed without any bait to the trap, and the simple dropping of a very small quantity upon the plate or plates of one or more gins will prove its powerful attraction for cats, by causing the capture of one of these arrant poachers.

The advisability of the employment of the well-known box trap is, as far as effectiveness is concerned, rather dubious for vermin cats, as they become uncommonly wary, and except in the case of a rather inexperienced one just entered upon its vicious course of life, it is a better plan to use gins. But for cats such as those in London, having a propensity to sleep upon the flower beds, no better trap can be recommended than the box trap, further enhanced in attractiveness by the additon of a little valerian rubbed on the sides of the inner end.

Another trap which has been recommended for trapping cats is the "New American, &c., Trap." We have used one as an experiment, but never caught a cat in it.

The employment of poisons for the destruction of ground vermin in general and for cats in particular is a means to which we would never advise recourse, and is, except under certain conditions, not admissible, for the risk of poisoning animals other than those intended is

certainly not worth running; besides, the expedient never succeeds so extensively as to be much preferable to the more satisfactory mode, that of using traps.

If cheapness be a consideration where quantity is a necessity, traps for cats may be supplemented by snares, which are, however, not nearly so effectual nor so suited to varied situations. They, however, are by no means to be despised, and, when carefully made and considerately employed, are often of great service in their multiplicity. We will, therefore, devote a few observations to the description of snare necessary. The snare consists of a running noose fastened to a stake, and these latter must be of slightly larger dimensions than those necessary for the vermin traps. They require to be the same kind of stake, but must be quite 18in. long. Through the top, or unsharpened end, of each bore a hole about 2in. from the extremity; this hole should not be more than an eighth of an inch in diameter. The stake, however, should not be pared more than necessary to form a point, so as to avoid showing white wood above the ground. For the noose we employ wire alone, and that size which is used for picture hanging and has about twelve strands in it, but if more can be obtained in a certain thinness of wire it is better to employ it. The wire should be very tough and supple, but only sufficiently so to make it run easily in the noose, and, at the same time, stiff enough to remain in the position in which it was originally placed, provided, of course, that it be subject only to ordinary conditions.

To make the noose described, and fit it on the stake, cut the wire in lengths of 20in. and form at one end of

each piece a loop about ½in. long, and very strong. If one is well up in it, splicing is the best way of securing this loop, using what is known as the eye splice, but if otherwise, then we prefer the bowline knot, as the tidiest and least likely to give way—in fact, it cannot slip. To tie it on to the stake, push the end opposite to the loop through the hole in the stake, and draw the wire through about 6in.; then, holding the loose wire with the loop, level with the stake and beneath the hole, take the other end of the wire and pass it right round the stake under the loose wire, and then back again through the hole, making the end pass between the wire that is round the stake and this latter itself. Complete the fastening by a hitch over the loop wire. If this be done as directed, one has formed the same sort of knot used for tying scaffolding together, with the exception that one turn of the knot, instead of passing right round the stake, only goes half way and then back through the hole bored for this purpose. This constitutes the whole manner of making snares suitable for cats, and as the cost is so slight, any number can be made.

The best spots for these snares are rabbit holes in hedgerows, if any exist in close proximity to the dwelling. To set these, having damped, say, a small piece of cloth, or any such material, with a few drops of tincture, place it about a foot within a nice round bolt hole level with the ground; then drive in the stake to the required depth, that is, so far till the hole in it is about one-third from the upper side of the rabbit hole; then form a running noose by drawing the wire through the loop at the end

of the piece, and fit it neatly, to be large enough for a cat's head to go through, and, at the same time, of slightly smaller circumference than the hole in the hedge-row. The cat, in trying to reach to rub itself against the valerian, gets caught round the neck in the snare, and when it pulls back hangs itself. Further, the employment of the snare may be resorted to in cases where a hedgerow, forming the boundary of a plantation or wood, has on its outside a rabbit run along it, or, failing this, a fairly even track. Place a dead rabbit, pegged down, upon the ground; lay a snare upon each side, and place in a line with the run and at the side of the rabbit two bushes of briar, thorn, or something similar, so as to form a passage, as it were, to the rabbit. In the same manner snares may be employed upon the tops of hedges for cats, and by employing valerian again at the roots of trees; rub the valerian upon the tree, and set two or three snares about 12in. out on different sides. From these base spots it will be easy enough to determine where to set a snare for cats, and it must be left to one's own intelligence to select the most eligible and likely places.

The capture of vermin in and about poultry houses we have purposely left over until now, in order to prevent confusion. Besides rats, of which we shall treat in a future chapter, polecats, stoats, weasels, and cats may at any time obtain entrance to what is apparently the most secure run or house that can be obtained, and seemingly the vermin will often enter those which apparently offer no chance of ingress, while perhaps

another never really closed will never be favoured with a visit. Many of the misdeeds of this kind in rural districts, laid to the credit of the fox, would, we have no doubt, be more correctly set down as the result of a polecat's visit, or even of a stoat's. Especially, too, when chickens are about, or in cases where pheasants are reared, the losses sustained are sometimes even disastrous in their continual occurrence. However, steps are rarely taken in the right direction, and rats, foxes, and dogs are freely calumniated for what should no doubt be seen as the work of the vermin we mention. Both the stoat and the polecat, before entering a poultry shed, make a very careful examination of the outside, looking evidently for a place by which to escape, in case their entrance be occupied at the critical time. The survey they hold leaves them very open to be trapped, and therefore, mischief having once been perpetrated, traps should immediately be set at intervals all round the house, some small trap being employed, if considered advisable. If any drain holes run through the wall, a trap should be placed in them, and in the case of wooden sheds where a sliding door at the bottom forms the place of ingress and egress of the fowls, it is advisable to fasten this securely, leaving about 3in. open at the bottom. Upon the inside place some traps all along this opening, fixed open, and with the jaws to the ground, about 2in. distance from the hole; a good way to do this is to have a square board about 18in. wider and 6in. higher than the slide door; this board leaning over the hole prevents the fowls getting mixed with the gins, and these latter can be suspended over the board by means of their chains. For setting

inside, obtain one or two drain pipes just large enough to allow a small vermin gin to work inside them, and having laid them upon the ground, set a trap and push it inside. It is almost a dead certainty that any vermin in the house will try to go through this pipe, with what result we need not point out. The New American Trap may also be employed in the manner described already, as suitable for catching against hedges and walls.

Weasels, having a propensity for eggs, generally seek about the nests, but are by no means unsusceptible to the lusciousness of a chicken; an egg or two placed in a nest upon the ground may for this purpose be poisoned by the insertion of a very small quantity of strychnine, but we need scarcely point out the absolute need of extreme care, and would certainly write "poisoned" upon eggs treated in this dangerous manner.

Cats are particularly addicted to killing chickens, both of fowls and pheasants; in such case, however, the steps to be taken are obvious enough. Ducklings about the fields or even close to the house are uncommonly exposed to the attacks of stoats, and it is difficult to suggest any remedy, for it is abundantly evident that what will catch the stoat will catch the ducklings also; hence the best plan is not to allow them too far away from their house. Both the "High Elms" and the "Patent Break-Back" traps may be kept continually at work round poultry sheds and runs, but care should be taken to keep the birds and young chicks and ducklings away from them, otherwise the bait will prove their ruin.

CHAPTER XXXIV.—GROUND VERMIN.

The Otter.

WHAT the stoat and polecat are on land the otter is in water, and as the former are detrimental to the preserver of game, so is the otter to the owners of streams which are strictly preserved for trout and salmon. Although an animal of but medium size, the otter has obtained a greater notoriety as a destroyer of fish than, perhaps, any of the more generally accepted "vermin" have as regards game and rabbits, and were it not that it is becoming daily less numerous, and, as a natural consequence, more wary—not to mention its reservation for death at the hands of the otter-hounds and the sport obtained thereby—its extinction would be more rapid than it is.

Possessed of an exceedingly fastidious taste, and well able to discriminate by the appearance of the fish the excellence or otherwise of their condition, the otter invariably selects for capture those in one stretch of river on which the owner may have "had his eye" for some time

past, and, if there be a particularly big trout which may have once or more times eluded the ingenuity and patience of its would-be capturer, he will probably go down to the river one morning to find it, insufferably mauled, lying upon the stream bank. Acts of this kind have brought the otter into such ill repute with all proprietors of trout and salmon rivers that the capture or killing of one is generally a matter of congratulation.

Otters vary considerably in size, and, to a certain extent, according to locality; but the average length of a full grown dog otter may be given as about 40in. to 42in., although occasionally very large specimens may tape close upon 4ft. from the tip of the nose to extremity of the tail. The weight varies also, but in the male may be set down as about 20lb. to 24lb. The female is invariably the smaller of the pair, measuring a few inches and scaling a few pounds less than her mate. The colour of the otter is a rich dark brown, deepest in tint on the upper and outer portions of the body, with a slight tinge of light grey throughout, partaking more of this on the inner and under surface of the body. Upon each side of the face, at the back of the lips, the fur is in two small patches, almost white, this marking being very prominent in some specimens, whilst in others it is only noticeable by its indistinctness. The eyes are not large, but are, nevertheless, of great power, being placed well forward on the head and very slightly protruding, so as to give the animal the ability to keep its intended prey, whilst pursuing it, well within the sphere of its vision, whether, for strategical reasons, the pursuer be compelled to swim at the side, over, or under the fish.

The ears are short, inconspicuous, and small in the opening. The mouth is situated lower than with the weasels, and is comparatively small, the upper lips hanging somewhat over, and being provided with long and bristling whiskers. The setting of the teeth is of a kind uncommonly favourable for the infliction of deep and jagged wounds, and most excellently adapted to the capture of such slippery customers as trout and salmon.

The otter's fur is of very similar nature to that of the polecat, being of two kinds, the one intended for the actual protection of the creature's body from the effects of water, which, of course, fails to penetrate it in the ordinary course of things, and which lies close to the skin, being a thick, soft fur, while the outer coat of the two is long, coarse, and hair like—intended, no doubt, for aiding the animal to pass through the water with the ease and comfort necessary to the excessively swift rate at which it pursues its prey. The whole construction and appearance of the animal, even when dead, produces an impression as to its being almost litheness itself. Its short and broad legs, terminated by feet webbed to a certain extent, are capable of exerting a very considerable amount of propelling power, and anyone who may have been at any time lucky enough to have observed the action of one of these supple animals gliding through the water in its natural state will have seen some of the most elegant actions of which any animal is capable. At one time almost bounding—but silently—through the water, before one has time to realise the fact it has turned, and is proceeding at an equally astonishing rate

in the opposite direction, following with extreme ease and elegance and equal, if not superior, rate, the movements of the fish whose capture it has in view, until with a sharp, almost lightning-like snap, it seizes its prey across the back and swims complacently to bank or to some favoured boulder or flat surface, where it can conveniently discuss the merits of its finny food. If the fish be a small one it will probably devour nearly the whole, but in the case of larger ones the back portion only is eaten—chiefly what might be termed the shoulder, always a succulent and flaky part of either salmon or trout, be these latter big or little.

The havoc otters make in a well-stocked river is almost incredible, in spite of all that may be said to the contrary. "Facts" (as we often have impressed upon us) "is facts," and facts are generally more conducive to correct opinions than theories on the part of non-followers of the gentle craft. Like their dry land counterpart, the stoat, otters are by no means satisfied with providing a meal, or even a meal and a half, for self and family, but will go on catching and killing until, as a writer in the *Field* expressed it, "like a sea king of old, their course is strewn with mangled victims." As soon as its appetite is partly satisfied, the otter amuses itself by capturing fish, with which it swims to the bank, and takes a bite or two out of them, causing but little injury to the flesh of the fish itself, and hence salmon and large trout, &c., are often found along the banks of rivers so little gnawed as to be quite fit for food. One argument which has been urged in favour of the otter is that it has a great liking for

eels, and prefers them, whenever obtainable, to all other fish, and that in this manner its services are very valuable, for the reason that there are no greater destroyers of trout and salmon ova than eels. This may be all very true, but it must also be remembered that for one eel killed the number of fish is wholly out of comparison; indeed, in most trout and salmon rivers eels are not so very numerous, more especially in the higher parts of the river, which the fish reach for spawning purposes. Any amount of argument, however, will never convince people who adopt opinions favourable to the extension of their own sport, or, not uncommonly, to the limitation of that of others, for there are always some few discontented but, nevertheless, wholly uninterested persons, prone at all times to find means to cripple the angler's sport, and seeming to have a peculiar dislike to the followers of the Waltonian craft.

Occasionally, when the streams are low, or when the contrary is the case and heavy floods prevail, the otter may, for a time, be quite unable to obtain any of its usual food, and is compelled to make shift in any other directions which may offer a chance for appeasing its now less fastidious taste in the shape of animal food, and in some cases its hunger has been so great that vegetable substances have been resorted to. This, however, is quite a rare occurrence, and may result from the sudden freezing of the river in which the otter has been accustomed to find its prey. In the case of animal food, it generally, when driven to such extremes, either endeavours to obtain rabbits, or failing this, the pangs of hunger seem to direct its attention

to a more satisfactory source, and a visit to the farmyard will be the result, when the poultry will suffer considerable destruction. Occasionally even such unwieldy victims as a sucking pig or lamb, which might be unprotected, have been carried off and devoured. It must be observed, meanwhile, that such unusually necessitous conditions rarely fall to the lot of the otter.

The places which the animal haunts are so extensive and varied that but little can be said concerning them, more than that a greater length of water is passed and re-passed by the otter than anyone might suppose except those that have taken part in some of the hunts becoming so popular. It is, therefore, only necessary to say that, undisturbed, the otter chooses certain boundaries which it but rarely passes, and generally confines its attention to the fish frequenting the stretch of water chosen. Its lair is not at all a cleverly arranged one, or well calculated for defence, but it is mostly adopted as being favourable for egress at some spot unlikely to be observed by any enemies, of which, however, it has none beyond its human foes and their invariably attendant dogs.

The lair of the otter will probably be situated beneath the roots of a large tree growing at the water's edge, or, it may be, up some roughly constructed drain, more especially those known in the locality where they exist as underground gutters, some of which are excellently constituted strongholds for the animal which adopts them. Further, any natural crevice in a single rock, or between two; also the passages and interstices formed among rough and large boulders, washed clear of soil by some flood,

or laid bare in the course of time, along the banks of the river. But the chief and most favoured spots, and also those offering the best means for escape and security, are situated in and about old weirs, or even weirs still in use. Such dams to the water, more particularly those formed of large and massive roughly-shaped stones, piled up as the support for the wall, or the more regularly formed part of the weir, often abound in nooks, holes, and crevices forming otter lairs *par excellence*, and their continual adoption for the purpose shows the esteem in which they are held in the otter mind.

Lutra but rarely burrows, indeed, scarcely ever; but, when such is the case, the work is generally performed with difficulty, and probably also with reluctance, the place chosen being almost always some part of the bank formed of sandy deposit of the river where the stream used to flow. The excavations are never considerable, and mostly consist of a passage into a rather larger tunnel of short extent, whence are one or more passages out, occasionally close to or even below the level of the water. The actual nest in which the young are brought forth is usually formed in a roomy and dry hollow lined with dead rushes, dry flags, and similar plants, which grow along the river-side, together with dry coarse grass and bracken. Its position is generally close to the water, which serves as a refuge for dam and offspring in case of danger, when they plunge into the stream and endeavour, unobserved, to attain cover along the banks of the river. The young are brought forth between the middle of March and the middle of May, only a single litter occurring

annually, when sometimes two (or more, to five) are deposited.

The chief part of the otter's prey is obtained in the early part of the day, and, after a preliminary morning bath, and the gambols attendant thereon, they invariably go down stream for the purpose of capturing fish. A return, however, is made as day succeeds morning, and, with the exception of those streams in which they are quite undisturbed, they rarely leave the near neighbourhood of their lair until towards evening, when they again sally forth, but to a less distance than in the morning.

The sport of otter hunting, although formerly more favoured than at present, is even now pursued to a considerable extent, and always receives support. Although patronised by nothing like so large a class of sportsmen as either fox or hare hunting, still it possesses for some an indescribable charm, and is, without exception, to those capable of bearing fatigue and exposure to wet, the most exciting and exhilarating of the sports which are a feature of English life. The necessarily early hour at which a hunt commences bears in itself a stimulating influence, and when the pack are in full cry up the stream upon the "foil" of a lately-passed otter, no mean agility and endurance are required to keep up with the dogs and be ready for a sharp tussle in mid-stream when the varmint is at length brought to bay after a run of an hour and a half. Indeed, the excitement is sometimes so great that one may look with astonishment at its effects on the hunters, in the prodigies of leaping accomplished during the fervour of a hot trail.

Whether the otter, speaking with regard to so splendid

a sport, should be considered vermin, and treated as such, depends, of course, upon circumstances. Many rivers in which they are excessively numerous never have an otter-hound in their neighbourhood, much less a hunt, even one day out of the three hundred and sixty-five. Naturally, under such conditions, it becomes most necessary that some steps be taken to put a check upon their numbers, and by capturing a few scare the others to an extent to make them shift their quarters. When undisturbed these animals increase in numbers very rapidly, become more daring and destructive in the capture of their prey, and very soon make no small impression on the quantity of fish in the river.

When otters are looked upon as vermin and it is determined to attempt to catch or kill some, it will be found to belong to that long list of things "more easily said than done," for the trapping of an otter is by no means so readily effected as may seem. A good deal more depends upon luck than anything else, except patience, which is, in this instance, very necessary.

The otter has a certain number of places along the river bank at which it leaves the water, either with fish to consume or for any other reason. These tracks are easily discerned from the footprints of the animal, which are distinguishable from those of any other by the peculiar impression left by the round ball, constituting the pad of the foot, and called the "seal." If there be a shelving bank to the river, where a small level beach of sand exists, or a fairly open space of similar nature, these will certainly at some time be visited by lutra when leaving the water. If the landing place be well frequented it will be found that

the soft ground has become partially flattened from the continual passing to and fro over its surface, and the same may be observed when sand forms the slope.

But, before going further, it may be advisable to devote a few lines to the best kind of trap to be employed. The largest rabbit gins measure 5in. in the jaw, and, although adapted to a certain extent for catching otters, they are not so efficacious at the landing places as another sort which we shall describe. Besides, the ordinary rabbit gin will not hold an otter if it can so manage as to have a fair tug at its leg,

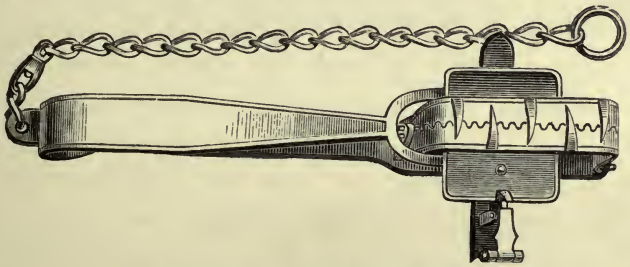


FIG. 27.—OTTER TRAP.

which, being nothing but bone and muscle, and "as hard as iron," the foot also being small and similarly constituted, is more readily pulled from the jaws of a gin than might be supposed. The trap sketched in Fig. 27 is intended to meet the objection which the common rabbit gin has, and, as will be seen, is a trap of great strength, and also very heavy, while the spikes forming the teeth of the jaw completely preclude any possibility of the otter escaping, once its capture is effected. This trap is made by Shave, of Wednesfield, in from 7in. to 10in. sizes. Each one can be had with a long

chain to allow of the otter reaching the water, where it is drowned from the weight attaching to its body.

This gin is most suitable for the landing places of the otter; and, when employing it, choose the most frequented one, and having scooped out a suitable place for the reception of the trap and chain (which latter should not be extended but curled up beneath the gin), set the trap and place it in position, when its complete covering must be carefully effected by means of dry earth or sand, as the case may be. All this most carefully done, obliterate entirely all footsteps, and having obtained a bunch of broom or gorse, soak it well in the stream and sprinkle the water it will hold over the trap set and the ground where one has been standing. Too much care in setting, and afterwards in removing all scent and trace of the visit, cannot be observed, and in order to lessen the chance of the otter noticing the fact that human beings have been in the neighbourhood, it is advisable to set any traps about midday, so as to give some time for the smell to work off.

Another place likely to be visited by otters is also suitable for traps. After having searched for and found the deepest holes in the stream, which would be likely to shelter the fish when pursued, look well about the edge of the river and upon the banks. If you are at a suitable spot evidence of the fact will be patent from the track made by the otter when leaving the water. On further looking round, a few yards from the water's edge, you will discover a tuft of grass of better and stronger growth than that surrounding it. If this be the right place the dung of the otter will be apparent amongst the grass of the tuft. Now, by some

means form a sort of run (not too distinct) from this grass to the most apparent landing place, at which make an easy slope to the water. At what seems the most favourable part of this—for choice, the spot where the otter must make some slight spring upwards—set one of the traps, at right angles, of course, to the path of the vermin, and conceal it with as much dexterity as can be brought to bear. This complete, use the means for destroying the scent which have already been noted The otter has always a certain spot to which it goes at least once a day. This place is sometimes an outstanding tree root, sometimes a stone, or occasionally a small heap of sand or earth, scraped together by the otter itself. About this will be discovered the droppings, easily recognisable from the quantity of fish-bones contained therein. Round about this rabbit traps may be thickly set and staked down, so that, in the event of an otter getting caught, its struggles to escape from one brings it into difficulties with another, or two or three others. The several traps will, in this manner, be certain to hold. If, however, it be considered advisable to let them be loose, a cord or long thin chain of about 30ft. must be attached to each, having some float at the end to show its whereabouts when the otter drags the trap into the water and is drowned.

Another plan is to make certain of the exact landing place of the otter, set one or more traps, and lay them just far enough in the water to be completely covered. They often prove efficacious when tilled in this manner, and when a systematic war is waged against the otters, every place likely to be visited when the varmints land

may be provided with one or more traps. Care nust be taken, however, not to unnecessarily expose a lot of loose gins, which are always very tempting to anyone finding them, whilst any chance of their being washed into the river must be guarded against.

The taking of otters alive and uninjured is a very difficult matter, on account of the wariness of the animal, which necessitates rather extensive auxiliaries to the trap. However, when the stream is narrow and of not too swift a current, the attempt can be made, and as the work necessarily will last some years, its first cost is really not so large as it might seem. The first thing to be done is to put a wire fence (that is, one of wire netting) across the stream from bank to bank, and reaching to the bottom. It must be a foot or so above the highest level which the water reaches. Then make a common pitfall at one end of the wire fence. Now comes the costly part of these arrangements, for a high wattled fence must be constructed, running about fifty yards out on each side of the wire one. Wattle hurdles may be employed for this purpose, if they be carefully fixed. But if such a fortunate thing exist as two stone walls similarly positioned, and quite fit to supply the place of the wattled fence, advantage may be taken of these or any other fence with steep sides, and the wire fitted to the stream, be it narrow or otherwise. The wire will require all the grass, and such like obstructions which will come floating down the river, removed from it about once every ten days or so, otherwise the fence would offer too much resistance to the water and be borne away. It is said that by employing a box trap in the middle of the

wire fence otters may be trapped by entering it; this is, however, very unlikely, and scarcely worth trying.

The means enumerated are the only ones likely to lead to the capture of otters; but, as we have said, careful setting and patience are more essential to success than anything else, except, of course, a quick discernment of any tracks and a considerable insight into the habits of the otter.

CHAPTER XXXV.—GROUND VERMIN.

The Badger.

SOME disagreement may arise as to including the badger in the list of ground vermin, but this animal is—whether rightly or wrongly—generally looked upon as a varmint, and treated as such in all those localities where it still occurs. Personally we have no sympathy with that kind of "sport" where a badger is worried at odd intervals by dogs which their owners may think game enough to draw the animal from its tub, still we are always ready to see a fair set-to between dog and badger at the earth. The malpractice of "baiting" seems unnecessarily prolonged and extremely cruel; often in these encounters the badger receives many bad wounds, and being—to employ a popular expression—half killed, is then left to recover sufficiently to meet another mongrel or two, these mongrels being of that particular no breed which are "all there" up to the first little touch they receive, but which the slightest bite is sufficient to send off yelping, with their tails tucked tightly between their legs.

The badger is a quiet and, to a certain extent, inoffensive

animal, possessing a good deal of that nature with which the orthodox British Lion is credited, except when aroused to action by the intrusion of some terrier. This tends to make it in some instances furious and headlong in its attack, whilst on other occasions it acts on the defensive, and will only return blow for blow. When roused it will be found capable of employing to terrible advantage the means of defence with which it is provided, and probably this is what leads to the continual "draws" which take place whenever a badger is captured, for there are not many dogs possessing the strength and pluck necessary to extract, without receiving serious injury, a badger from the tub in which they are generally confined.

In size, the common badger, or, as it is generally but uncourteously termed, the "stinking brock," is about that of a middling dog, but stands, comparatively speaking, much lower on the legs, while its body is broader and more extended. The head is pointed and long, approximating in shape rather to that of the polecat, although, of course, much larger, while the nose projects more than is the case with the fitch. The ears are round, set low, and almost concealed by the hair of the face, while the tail is short but full sized. The hide is very remarkable, on account of its extraordinary toughness, being at the same time uncommonly thick. The hair is coarse and uniformly long over the whole of the animal, while the colouring is noticeable, on account of the markings taking the contrary course to the usual one, and appearing lighter on the upper surfaces of the body. This peculiarity of colouring in the badger tribe is one of the many freaks of Nature, and in

the immense extent of the animal kingdom is so exceptional as to warrant more attention being given to it. The lighter shades of colour of the fur occupy the shoulders and back, while the inner and under surfaces are nearly black. The markings upon the head are also peculiar. The forehead appears white ; on each side of the face is a band of black about half way between the eyes and the nose; this, gradually spreading out, passes back to the ear, upon each side of which it extends about an inch and then dies away behind it rather sharply; below this band the hair is again white, except the surface beneath the chin, which is black. It will thus be seen that the colour of the hair round the head is in alternate bands of black and white. The separate hairs of the upper part of the body are marked with three shades of colour, and, as in the fitch, are a yellowish white at the bottom, black to brown in the middle, and a kind of tawny ashy grey at the outer extremities. The mouth is a marvel of strength, and besides being furnished with long and sharp teeth, the jaws are so formed that, once closed, they are held locked together, and retain their hold without the necessity of effort. The animal is thus able to inflict a wound of considerable size, and the act of resistance, such as a dog trying to release itself, renders the bite far worse. The legs are exceedingly muscular and short, while the feet are furnished with long and powerfully formed claws, one on each of the five toes which both fore and hind feet possess. These claws are, therefore, admirably suited either for burrowing or searching in the ground for such roots as the brock considers to its taste.

The daytime is spent in sleeping, and, moreover, in the

farthest or deepest corner of the burrow; the badger only rouses itself as evening approaches; and when it is really night, and everything is quiet, it sallies forth in search of food, adopting a quiet trot by way of progression. The movement is not an easy-going one, and the animal seen in the uncertain light of evening seems to resemble a young pig, as it slowly rolls in its gait. The food upon which it chiefly subsists consists of certain roots and any kind of fruit; but as sufficient vegetable subsistence for so large an animal is not always forthcoming, it turns to the acquirement of animal food, such as rabbits and hares, occasionally feathered game in very insignificant quantities, and in the spring time, when food is scarce, it may be tempted to destroy a young lamb or so. Wild bees and wasps also have their nests discovered by the badger, which composedly devours nests, honey, and grubs together, taking no notice of the bees or wasps, which are unable to reach its skin through the mass of coarse hair with which its body is clothed, and, were they able, the tough hide would feel but little inconvenience from the stings of half-a-dozen wasps, more or less. It is also affirmed that it greedily devours snails, worms, and similar delicacies, while such hymenoptera as are fossorial are no less liable to be unearthed and eaten.

Those roots which form a portion of the badger's food it easily obtains, discovering them by scraping out the earth till they are reached, while the same means are employed to attain such bees', wasps', and ants' nests as may be situated below the surface of the ground. When obliged or inclined to obtain rabbits, it, of course, has to trust entirely to its ability to creep up to and secure them

before the intended prey is aware of its presence. It will also destroy and consume the eggs of pheasants or partridges, besides those of such other birds as form their nests on the ground, but this to no very considerable extent, for reasons sufficiently obvious. It may, in truth, be allowed that the badger is not of the highly destructive nature of the other vermin of which we have so far taken notice; and although sometimes a solitary one may take up its residence near to, and commit considerable depredations in, a rabbit warren, still this is no sufficient reason for the wholesale way in which the now rather scarce species are assailed and killed as often as occasion offers.

The badger is, as far as its habits are concerned, an eminently solitary animal, and they are hardly ever found together, not even with the females of their own species, and the observance by anyone of two badgers in company is an exceptionally rare event. The fact of their constantly sleeping during the daytime, rolled up cosily upon a warm couch of dry leaves, &c., together with the facility with which they are enabled to procure food, tends to keep the brocks in good condition, and they are invariably sleek and fat when captured.

The burrow is most generally formed in the centre of some thick and close covert situated upon a gravelly or sandy soil, and is dug out rather than burrowed. When digging this holt, it first makes a slight entrance by employing its snout to loosen the earth, which it scrapes away with the fore feet as far back as possible. As in time, however, the loose excavated earth accumulates to such an extent

as to impede the further progress of the operation, and is accordingly flung further back until a portion of the length of the tunnel is formed, it would soon choke up the entrance; the badger therefore sets its stern against the heap of accumulated loose soil, and by pushing in a retrograde direction removes the whole obstruction in very few seconds to the outside, when it is flung in all directions as far away from the entrance to the holt as possible. Having executed this to its satisfaction, the badger resumes its labours in the tunnel now forming. The burrow, when complete, is a rather extensive one, and will, in some cases, have three or four exits. At the far end is a rather larger space formed, to which dry leaves, grass which has become hay, ferns, and similar material for the bed or nest are conveyed. The badger, besides being solitary, is, in its natural habits, one of the cleanest of animals; it never allows any remnants of food to lie about, these being *pro tem.* deposited in a certain corner, to be eventually removed; nor on no account does it suffer anything of an offensive nature to be near its dwelling, and should by chance any other animal pollute the earth, its burrow will probably be deserted and a new one excavated.

To this burrow the female resorts at breeding time to deposit her young and to rear them. They are three, four, or five, are brought forth in early spring, and are carefully suckled for five or six weeks, after which they are gradually weaned off and instructed how to provide for themselves. During all this time the male badger ceases to frequent the burrow where its progeny are being reared. For food the female provides herself with a quantity of

grass, cleverly rolled up into balls, which are deposited in a sort of larder situated in a small side chamber; while all offensive substances, with the remains of food, are provided with a certain kind of sink, sunk in the floor of the earth, for their reception.

The young of the badger can be easily tamed, and become very docile and interesting pets, soon learning to distinguish their master, while the old ones are quite susceptible of human influence, and can be also tamed by the exercise of some trouble and patience. That the badger is a stupid animal is a popular idea, but, nevertheless, a mistaken one; and although having far too much trust in the kindliness of human nature, is quite capable of taking ample care of itself when its suspicions are once aroused. The offensive smell which has no doubt obtained for the badger the name of "stinking brock" is caused by the secretion of an odorous substance beneath the tail (as in all the weasels), which is in this case exceedingly offensive.

The modes of capturing badgers are not very varied; the means mostly adopted often offer some sport and can very well be enjoyed. The chief requisites are one or two couples of good dogs, well up to their work, silent and steady whilst about it, and half a dozen or so of strong sacks or bags. The mode of procedure is as follows: Having discovered a frequented brock's earth and obtained the various necessaries, a couple of persons should start off one evening about eleven o'clock—when there is a moon is preferable—and make direct for the earth; arrived at which, and having found the badger to be out seeking his food, they should fix in each of the holes a bag,

pushing it into the hole, and securing the edges of its mouth all round the outside by means of good strong and reliable pegs. As soon as this is satisfactorily completed, one should go off with the dogs, which will soon take up the scent, but, being steady, are easily followed, until they find and turn the badger, when he immediately makes for home, and would comfortably reach his retreat but for the sacks impeding his progress. Directly the badger enters, the one who has been watching concealed at the burrow must run out and secure the mouth of the sack. It is advisable to remark that unless the bags are strong enough the impetuosity of the badger's retreat will probably take it through the end of the one which should retain it. This, as far as it goes, is by no means a bad way of taking badgers, and there is always some excitement allied with it. On occasions the brock will manage to get out of the bag before one has time to secure it, and to counteract this eventuality it is a good plan for the person remaining at the earth to keep a terrier by his side, which can, by attacking the retreating brock, cause it to stop until its capture may be safely effected.

A modification of this plan of capturing badgers has been practised with success, but, as will be seen, some experience in handling the animal is required. Instead of two persons only one is necessary, and he should be accompanied by a sheepdog, which must, of course, be up to this kind of work. Having got upon the scent of the brock, and found it, the dog, instead of attacking the ear, flies at the rear of the animal, and while it is constantly turning round to retaliate one must, by keeping

close up, watch for an opportunity to "tail" the badger, which, although supple enough about the neck, is however stiff in the back, the result of which is an incapability to reach the hand which holds it behind. Of course the badger should be immediately bagged. We need scarcely point out that this mode of proceeding to catch a "stinking brock" should not be tried except by one who is pretty certain of being able to accomplish a satisfactory result without receiving a bite or two from the exceedingly well-constructed mouth. Large gins, made without any teeth, and with the flat piece where the teeth should be turned slightly inward, can be employed at the earth with some success. The spring, however, must not be too strong; but this cannot be said of the construction of the trap and the chain, both of which must be well made and securely fastened together. If a stake be employed, owing to there being no tree near enough to which to fasten the trap, it must also be capable of holding to a more than ordinary extent, otherwise the badger caught might dig it up; as, however, one knows pretty well when it comes out, or if not, one can wait concealed until it does, the time allowed in which to make its escape need not be long. The traps can either be set to catch it coming out of its earth, or to capture it when re-entering.

Another mode sometimes adopted is to form at the principal entrance (the others having been all stopped) a sort of passage by building two side walls, each about 2ft. long, out from each side of the hole, and just high enough to admit the passage of a badger, when they are covered with flat stones or something equally suit-

able. Just near the entrance to the burrow have a groove upon the top of this little tunnel wide enough to allow a flag to fall in edgeways through it. At the entrance to the tunnel place a heavy stone to close it, and about 6in. inside the passage, and close to each side, drive two pegs into the ground. They should be 1ft. long, and have a nail driven in about 1in from the top of each, projecting about ½in. Next obtain a piece of wood of such size as to fit exactly between the two other pieces when they are driven in to about 6in. Upon this tie two lengths of string about 4yds. to 5yds. long. To set this contrivance, fix the piece of wood with the string attached under the two nails of the other pieces, bringing the strings up out of the extremity of the tunnel, and then, taking them back over the top of the tunnel, fix them so over the groove as to sustain the flag, which would otherwise slip down. If this be all managed correctly and handily, when the brock, driven from his earth by a terrier, seeks to escape through this tunnel, he of his own accord knocks the stick attached to the string out of its position, which, flying upwards by the weight of the flag suspended over the string crossing the groove, allows the flag to fall, and the badger is captured and unable to move in any direction. This is a modification of the box trap, and if carefully made is certain to succeed.

Besides the plans above described, we know of no other means for taking badgers alive except digging them out, but each mode is quite certain to succeed if properly practised, and one or other will be found suited to any exigency which may occur.

Bearing in mind what we have written on the habits of the badger, there is, to our thinking, no need for its wholesale destruction. If, by its frequent occurrence, it become a nuisance to the game preserver, it can be easily captured alive and transferred to "fresh fields and pastures new," where it can pursue the somewhat even tenor of its way without detriment to the interests of game preserving. We possess a considerable liking for the stinking brock, and would much regret that anything we have written should tend to the wholesale killing of this interesting animal.

CHAPTER XXXVI.—GROUND VERMIN.

The Fox Considered as Vermin.

IT is with some diffidence that we head the present chapter, but after reflection we have determined, at whatever risk, to include the fox amongst vermin. From the game preserver's point of view such it undoubtedly is, but what hunting men think is quite another matter. However, to meet the question fairly, we intend to devote several chapters to the fox, some taking into consideration its characteristics as vermin and the best means of destroying it, the others treating of fox preservation and the best means of increasing its numbers. We shall then, we hope, please both parties; provided the indulgent reader who "does not hunt and does not mean to," but has a stock of pheasants, will take no notice of a certain weakness of ours, which may presently appear, and that the other indulgent reader—for we hope for both—will stop at this point and go on to the next chapter.

Few animals excite more interest than the fox, not only among such as are directly interested in rural sports, but

even among those whose lot it rarely is to leave the neighbourhood of the town; and being the most widely practised of modern sports, it is not to be wondered at that a good deal of exaggeration has at all times attended the beauties and wonders of fox-hunting and made it seem more romantic and infinitely more full of adventure than is actually the case. It has, indeed, become quite a fashion to almost pity anyone who seeks the destruction of foxes other than when "the vig'rous hounds pursue" over hill and dale with all the accompanying glories of hunting. Be this as it may, at the present time we are treating of the fox as vermin, and intend to detail all the particulars necessary for the capture and suppression of one of the most obnoxious animal poachers which infest our preserves, although numerous and warm controversies have taken place as to its game-destroying powers. And here let us remark that there seems to exist a certain number of people who, wholly unacquainted with the subject they discuss, are prone to deny facts gleaned from long personal experience by sportsmen and the like, and ready to treat these facts as mere inventions. Such are they who foster varmints like the fitch and its many mischievous relatives, and who would make us believe the fox never, or, at least, but very rarely, touches or destroys any of the animals upon which it subsists. However, we, unfortunately, never came across a useful varmint, and are compelled to assert that, as far as our experience goes, the fox is the worst enemy to game preserving which we have, excepting the human poacher. To catch the vermin fox is not easy, compared with weasels and stoats, and there is no animal of the

British Isles, under the name of vermin, more difficult to discomfit.

Foxes, we believe, are as much vermin as either the stoat or the polecat, and although fox hunting is a very excellent and exciting sport, still we do not see why it should be carried on to the disadvantage of those many persons who, taking no part whatever in the sport, are obliged, if they would not seek disfavour, to protect and encourage foxes even to their own embarrassment and pecuniary loss. There are very many people at the present moment, who while to all appearance enthusiastic over the number of foxes and the sport obtained in hunting them on their land, are at the same time secretly destroying the varmints whenever the chance offers. Many of these are game preservers, and it must be extremely annoying to them to have to protect the very animals which are the worst drawbacks to the increase of game which they can encounter. Some, we know, want both pheasants and foxes, and these should have their wish, but what we see no reason for is the preservation of foxes by those who never take part nor interest in the hunt. It has been stated that the fox is dying out; perhaps it is; our opinion is exactly the reverse, and we may rest assured that, if things go on as at present, these varmints are as little likely to die out as the race of men who follow the brush.

In Scotland no one objects to a fox being killed, and surely Reynard is no more plentiful there, nor the people less attached to rural habits and the surroundings necessary to a rural life, than in the southern part of the kingdom; then why should we dwellers in hunting countries be compelled

to foster, or appear to foster, the vermin whose existence in our coverts we most dread, or whose entrance into our well-stocked poultry house is most destructive? For our part, we fail to see a conclusive reason; and when we catch a fox, that fox either goes to a distant part of the country from which it may be no easy task to return, or is despatched to a "happy hunting ground" the entrance to which is through a noose of cord.

The character of Reynard remains the same wherever he may be found, as the astute hunter of his prey, with which characteristic his name is always associated. Though, strictly speaking, the fox is a flesh-eating animal, circumstances compel it in some cases to subsist on fish, such reptiles as frogs, and snails, together with fruit and vegetables of various kinds, and it also has no objection to devour those insects for which certain domestic cats of scraggy appearance seem to have a *penchant*. In Scotland, there called "tod," it is of considerable service in keeping down the immense number of moor mice which would otherwise destroy or depreciate the vegetation of many highland moors.

The cry of the fox, generally termed its bark, is a series of quickly uttered sounds, partaking of the nature of the bark proper and a half-yelping whine, except at the period of clicketing, when it becomes a sort of yelp. During the summer we have but rarely heard the fox bark; but during the autumn, we have, night after night, heard them lifting up their voices for five or six minutes at a time. There are few more courageous animals when bearing pain, and although very often at the instant when the jaws of a gin snap upon its pad, or in similar circumstances, it may

utter one or two barks partaking more of an angry tone than a painful one, still it will maintain a most obstinate silence under the influence of acute pain, and resist with the same obdurate determination the attacks of either men or dogs even until death. We must confess to never having seen a fox give in, and even under the most overwhelming attack it fights with great desperation. It is no very uncommon occurrence for a fox when caught in a gin to endeavour to gnaw its leg through, in order to effect an escape; as to whether this be the result of instinct or not opinions will differ.

Foxes very often die in the gin before they can be released, and, although the torture they must suffer is considerable, still, in many instances, they die from sheer broken-heartedness.

Of course, care must be observed if a fox has to be handled, for its bite is always severe, and ofttimes dangerous, and, although bad results are not absolutely certain to accrue, they may do so, and, therefore, the risk is not worth running.

When the fox has captured and killed a bird of any sort, whether game or not, it but rarely buries it, and in most cases carries it either to the cubbing earth, if it be the season, or to its own earth, or to some spot where it may quietly consume its prey. When carrying birds, its most general way is to seize the capture in its mouth by the neck, and by a dexterous jerk of its head, to fling the body of the bird back over its shoulders. Sometimes, however, it merely bears the capture in its mouth by the neck, and either allows the body to dangle in the air or drag along the ground. Rabbits and hares it sometimes, but not often, carries

thrown over its neck and shoulders, but more frequently —indeed, nearly always—in much the same style as a dog, namely, seized across the middle and conveyed belly uppermost. In every case, however, Reynard, when thus provided, bears his burden with consummate ease and freeness, and even if pursued will rarely be inconvenienced so as to drop his capture. The quantity of rabbits, &c., which a fox will manage to lay hold of, and retain in its mouth, is rather surprising. We have seen one trotting about, in a very conceited manner apparently, with three full-grown rabbits securely held between its teeth, and then attempt, and actually succeed in, picking up a fourth, with which number it proceeded to decamp.

As we have said, while the fox can obtain rabbits in plenty, it rarely proves very destructive to game and poultry, and although at all times ready to snap up any pheasant, partridge, or hare which may be at all open to capture, still it does not systematically hunt for and obtain game in the same persistent and wanton manner in which it pursues the "frugal coney," whilst poultry it attacks only when other sources fail.

The fox captures the rabbit in a variety of ways, more often probably by lying in wait than by headlong pursuit. Having ascertained, by the aid of its wonderful acuteness of scent, the presence of a rabbit in a burrow, it will invariably, provided its appetite be not too sharp, take up its position just above the hole from which the rabbit will probably come out, and lying low to the ground with head upon the surface between its fore paws, listen for any movement of the unsuspecting inhabitant. As soon as

such signs are apparent it pays increased attention to the hole towards which the rabbit may be moving, shaping its actions accordingly, and placing itself in suitable posture for a snap directly the rabbit shows its head from the burrow, or rather its body; for when expecting no danger, and not having been disturbed, Bunny most often comes right out of his hole, after taking a prospect of the outside state of things from the fastness within. The fox, watching in this manner, often raises its head and takes sidelong glances at the aperture before the critical moment arrives, in much the same manner as a dog might. The instant the rabbit shows out, Reynard seizes it, generally across the back of the neck, with a jerk of the head throws it over his shoulders and trots away, proudly enough, until he arrives at such spot as seems a suitable place of repast; or, if his hunger has been already satisfied, whereat to bury its prey; or, if a family be in prospect, to the cubbing earth, where he deposits his capture and proceeds in quest of a second.

Another favourite mode of capture practised by the fox is to attain its object by stealth, and in such case the animal or bird captured may be a sitting rabbit, a hare, some game bird, or any furred or feathered creature of like nature. Rabbits in danger in their forms sit very close, and to this fact may be attributed the easy manner in which Reynard accomplishes his desire when he happens to discover one so situated, and it is to be noted that many rabbits are taken which are quite unaware of any cause for fear; the fox invariably creeps up in a perfectly noiseless manner towards the back of the sitting rabbit, until

he finds himself sufficiently near to raise himself from the stooping position in which he has approached, and, by poking his head round, is able to seize the rabbit, or, in other cases, when thick rank grass or similar substances offering no resistance form the shelter of the rabbit, a dexterous strike from one of his unerringly sharp pads quickly secures the unsuspecting animal. When a partridge, pheasant, or bird of similar habits, is discovered, much the same mode of procedure is employed to bring the fox sufficiently within reach ; but if circumstances prevent a near enough approach, he very often makes a rush and catches the bird before it has recovered from its surprise, or, maybe, before it has time enough to start its flight, although foxes will take, on occasions, tremendous leaps at a just risen bird in the hopes of being yet able to reach it, and, what is more, they very often succeed in bringing it down.

When the fox, however, in the case of rabbits or hares, discovers them feeding towards the centre of a large field, and is lucky enough to get sufficiently near for its purpose without arousing them, it will, perhaps more for the sake of play or sport than a desire for food, make a headlong chase of one. In such case, the animal pursued has to bring all its power of limb into effect, and then may not succeed in eluding the first rush of the fox ; but if it does this, and once gets fairly under way, a rabbit stands a good chance of getting clear of its enemy, while a hare has no great advantage over its smaller friend, as it cannot start with the same speed, although it increases it at every stride.

So far we have been alluding, of course, only to such depredations as the fox may carry on during daylight; its mischievous work is, however, considerably favoured by darkness, for both hares and rabbits addicted to feeding after nightfall are more easily captured in the open or by the fox manœuvring until it is able to get between the coneys and their burrows, or to approach the not very sharp-sighted hares nearer than would be the case were it broad daylight. Partridges, and such pheasants as may roost on the lower branches of trees, grouse where they exist, and all birds which choose their resting places on or near to the ground, are especially liable to the attacks of the fox by night, and the numbers of game birds and others thus destroyed must be exceedingly large; and in localities where many foxes exist, more especially those where they are preserved, a sort of unofficial warfare is always in progress between the owner of a game preserve, who also hunts, and his gamekeeper. The latter finds fault with his master for preserving foxes and pheasants in adjacent coverts, and the master blames his keeper for not having sufficient birds to show when The First comes round—a veritable case of six of one and half-a-dozen of the other.

Reynard is also a source of great annoyance when systematic small vermin and rabbit trapping is being carried on. In the first instance, he is always stealing the baits, without getting caught, for in the setting for a stoat the "uncommon" is palpably evident to the marauding fox, while in the latter case he filches the rabbits, mauls or frightens them, and is often very troublesome to trappers, gamekeepers, and the like.

Curiously enough, the fox has a decided taste for rats—food of a rather unpalatable kind—and will often visit the farmyard, and search about the buildings for these delicacies, which, if easily obtained, will keep its unwelcome attention away from the poultry. It will also watch about the edges of streams where a colony of the common brown rat has taken up its abode. It will not, however, trouble itself much about the real water rat, probably because this animal, being considerably different in its habits from its more destructive relative, feeds chiefly on roots and aquatic plants, and, consequently, has not the same nice flavour which the brown rat has.

The question of how foxes hunt, whether by sight or by smell, has been a subject of some argument, without much reasoning, and while some have declared for the former as the one and only means, others have equally strongly testified to its hunting only by the nose. In this argument both are neither quite right nor wholly wrong, for Reynard chooses the means most applicable to the occasion, and employs both powers of sight and smell to aid him in obtaining his prey. When the fox has any means of seeing its quarry, it hunts it most certainly by sight, and this is the case for the most part with rabbits. In coverts where the undergrowth close to the ground is thickly set, but comparatively open to the sight, such as gorse and long heather, the rabbit follows its run by sights, and when a fox pursues Bunny through cover of this nature —we have observed one so guided on more than one occasion —were it to follow the rabbit by scent alone, it would not once out of fifty times come within several yards of its object.

It is therefore compelled, guided partly by sound, whenever the chance offers, to obtain a sight of the rabbit, and bounding over the gorse and impediments of its course, attain such proximity to its prey as may be possible until either the coney makes good his escape, and scuttles into a burrow, or else is captured, jerked over Reynard's neck, and borne dangling away, half dead, but kicking vigorously, to the fox's earth. The chase most similar to that of a fox hunting by sight, and by nose when the sight fails, is that of a rabbit by a very quick spaniel, when the dog first puts the coney going. We have several times seen rabbits come bursting over and through a hedge out of a plantation, and waited for the fox in pursuit to follow, but have rarely more than caught a glimpse of shining colour through the green, to hear immediately the gentle rustling of dry leaves as Reynard slowly retired to a more respectful distance.

When a fox is out foraging for the supply of food which it obtains for its young, and which is always far in excess of what they require, or when hunting merely for the sake of catching and killing, on coming across a fresh trail, it will turn and follow it up, by scent, of course, until it may hope to come upon the animal in whose steps it is moving. In such cases the care with which it follows the scent foot for foot, turning and twisting strictly according to the trail, is remarkable, and often, when the fox happens to hit upon the scent of a rabbit or hare that has been out feeding, and whilst thus occupied hopping about in an aimless sort of manner over a portion of the field, Reynard follows the gyrations over their whole extent, whereas, if he had any real intelligence, it surely would prompt him to try

round the sides of the inclosure instead of working perhaps all over the field to ascertain the direction in which the object of his harrying had gone.

Occasionally foxes will dig out rabbits, more especially in localities where the depth of the soil is very small and the burrows are near the surface. When this is the case, the fox, carefully scenting about, discovers the whereabouts of the rabbits and digs right down upon them. Occasionally it is able to attain its object, but the operation is distasteful to the fox, and is but rarely entered upon. It has a favourite way, however, of frequenting such large burrows as may be excavated in hedgerows, and the manner it sets about its work is worthy of note. In the morning, when the rabbits are all out feeding, perhaps at some distance from their shelter, the fox manœuvres to reach the hedge upon the opposite side to that upon which the coneys, at least the greater number of them, are feeding. This attained satisfactorily, the varmint gradually and gently edges himself or half crawls on to the top of the bank, where he lies and watches the unsuspecting rabbits; and we know of an instance where the fox frolicked about on his coign of vantage for some time before the unlucky bunnies' attention was attracted, and as they endeavoured to scuttle into their holes, a lightning jump and one was secured, the usual twist of the neck, and with one bound our fox was back over the hedge and away. This was observed to occur several mornings running, at about the same time in the same field, but at different burrows, round the hedgerows. The fox subsequently trotted across the path of the man who observed these "goings on," and who remarked that

"if he'd only had a gun, he might have given Mr. Fox a broadside." Whether the varmint got an inkling of this murderous intent or not, we cannot say, but the "goings on" did not occur again.

Sometimes foxes come from a considerable distance to forage in certain plantations, while at others they confine themselves strictly to certain rather narrow limits; but the general course is for the fox to choose a rather wide area for the exercise of his depredations, extending the limits as the locality may be undisturbed and quiet, or, on the other hand, continually passed and repassed by human beings and dogs, which latter have an uncommonly depressing influence on foxes, and one rarely finds them lie in coverts continually entered by dogs chasing rabbits or searching for game. Occasionally foxes will commit their marauding in wonderfully close proximity to dwelling houses, where there are dogs and persons about, but this rather audacious behaviour is not at all a characteristic of the animal.

When they attack poultry houses, they most often choose those which are most distant from the house of the owner, or from the place where any dogs are about; and when such an attack occurs, and an entrance is effected, woe betide the farmer's fowls and ducks. It seems almost ridiculous to what broken-down old shanties the poultry on some farms are driven for shelter and, presumably, security, at night, and while the door is securely bolted and padlocked, there are perhaps a dozen places where a fox could obtain easy ingress. And yet we continually hear the foxes maligned for obtaining food and committing havoc in poultry sheds which offer no more opposition to the

entrance of vermin in any shape, from a rat to a fox, than if they were bereft of a door and had no walls. It is not wonderful, then, that foxes will pay visits to such places, and in some cases destroy all the luckless inmates.

Sometimes foxes will molest ducks and geese which are allowed to roam about in the fields, &c., but not very often. However, when they do, the result, as a sufferer in this way described his loss, is "a terrible mess of it;" and the geese or ducks, as the case may be, are rarely attacked without a loss of perhaps three parts of their number killed and taken right away. But in instances of such wholesale slaughter, the fox rarely removes all the bodies of the poultry killed; and if it do, some will probably be discovered at no great distance, if the direction indicated by the track of loose feathers as having been taken by the fox be followed up, when some, if not all the victims of Reynard's visit may be recovered, perhaps despoiled to so little extent as to be still fit for market or table. The quantity of poultry a single fox, or pair of foxes, will remove in one night to some distance from the place where they were destroyed is sometimes really surprising; and an instance came under our notice where two foxes, a dog and a bitch, entered a certain rickety old barn used as a poultry house and killed forty-seven fowls, large and small, and sixteen ducks; eleven were left in the house and the rest carried to and deposited in a gorse covert nearly a mile distant from the scene. Although it is a comparatively rare event for more than one fox to be observed on the same mischievous intent, still, especially in early spring when mating is going on, two foxes will often run

together for some days, and commit a considerable amount of mischief.

The fox when in pursuit of its prey is, as far as external appearance is concerned, a very different animal from the fox when it is itself pursued; and while in the latter case it puts forward all its energies, exerts every muscle of its extremely muscular body, and with ears laid back and its brush straight out behind in a line with its body, flies for life from the hounds behind it, when in calm pursuit of a meal it has a more slouching gait, and with ears up and brush on the move, threads through the interstices of the covert with speed, while ever on the alert for any sign or sound to guide it to the object of its search.

CHAPTER XXXVII.—GROUND VERMIN.

The Fox considered as Vermin (*Continued*).

FROM what we have written concerning its haunts and generally remarked habits, it will be seen that more than ordinary means must be adopted to counteract the so-called artfulness of the fox; and we would, therefore, not advise anyone to attempt the capture of this varmint without first obtaining information of its natural history and mode of life. Next to aptitude for learning signs and proofs observable only by experienced eyes, a second point of importance is nicety of manipulation of the means immediately at hand, and the capability of determining what is most suitable to the opportunity offered. It will then be seen that the capture of a totally unpreserved varmint fox becomes really a species of warfare in which the cleverness and skill of man is matched against such senses and acuteness of intellect as the fox is provided with.

The only trap which we would recommend for foxes is the gin, and it may be relied on that this is the only

one at all suitable. It is advisable to obtain the gins of the best manufacture, and of larger size than the usually employed rabbit trap, 5in. breadth in the jaws being the most suitable; if they be larger they become clumsy and difficult of effectual concealment. Due attention must be paid to certain points in each trap, which require more notice than others; thus, the spring must be strong, but flexible, having, if we may use the term, more bound in it than what may be termed snap. The jaws must be thick, and strongly but loosely fitted to the frame. They should not come too close together, and ¼in. is by no means too much play. Every attention must be given to the catch, to see that it works in a proper manner and does not offer any resistance to the flying up of the jaws, that is to say, one must be certain that considerable force is required to hold the flap over the jaw in order to fit the catch when the gin is in the act of being set.

The chains require more than ordinary consideration, and a close scrutiny of each one should be made, with the view of discovering any defects that may exist. As trapping animals is beset in itself with a certain amount of cruelty, such care as may be necessary to lessen the pain caused is well expended, while carelessness in the direction named is quite unpardonable. We once saw a fox which, after having dragged about a trap for nearly a week, had lain down to die of starvation and disease, virulent mange having followed the loss of food and exercise to which it had been subjected. It will thus be obvious that too much caution in choosing the chains and subsequently fixing the stakes cannot be observed.

The chains themselves should be strong and thick, of not too great a length, while the ring at the end must be of really good strong iron—necessarily so, as will presently be obvious. Too much examination cannot be given, and each and every link must be carefully gone over in search of cracks, &c. The swivel, generally the really weak place in the chain, must be also examined. More especially will weakness be found in the shaft of it, and the turn which joins it to the adjacent link. What is called the S hook, forming the connection with the frame of the gin, is generally very soft, and in some cases as pliable as wire. Its strength should be, therefore, thoroughly ascertained, and if found faulty it should be replaced by one more trustworthy.

Lane, of Wednesfield, makes a gin, which he terms his "Improved Trap" (vide Fig. 13, page 273), and the alteration he has introduced is certainly in the right direction; for, besides constructing the chains in a workmanlike manner, he has substituted for the S hook a link which goes round the bow of the spring itself, this being riveted under, instead of on, the top of the back piece, thus making the trap more easy to cover, and replacing an insecure arrangement by one both safe and much handier.

The next portion of the trap requiring attention is the stake, and although this is a particular to which often little or no importance is attached, it is, however, so highly essential, that a due amount of care and trouble is requisite to produce one of sufficient reliability. Referring back to our former remarks with regard to the stakes suitable for vermin gins, those necessary for traps for foxes

must, in order to obtain the strongest and best of their sort, be formed on the same plan, namely, of well seasoned and, consequently tough, ash, with the exception that the pieces must average from eighteen inches to two feet in extreme length before they are pared off and sharpened. Some soils of a soft and yielding nature will not offer much hold for the stake, and, in such cases, the full length of two feet should be adopted, whilst other ground of a clayey nature will retain a much shorter stick.

The ring must be driven down to within about three inches of the end of the wood, and in order to strengthen the part which is continually being hammered on, and tends to split, it is advisable to bind on three or four strands of wire about an inch above the ring. This prevents, in addition, the chain from becoming loose in the event of the wood being partially broken or split. The stake need not be smoothed when being sharpened off, and should offer a three or four cornered outside to the soil. Of course, no large number of gins need be provided, and for all purposes twelve traps at the outside will not only be found quite sufficient, but more than these if employed at once would probably militate against the very result which we desire, for from the nature of the fox, the existence of a multiplicity of different kinds of baits, all temptingly displayed at various intervals, would certainly appear to indicate that "something was up," and Reynard, otherwise confiding, would be alarmed, and seek the security offered by his earth. The catching of any sort of vermin is at no time an eminently easy matter, and although, in the case of the mustelidæ, &c.,

evidence is always observable as to their haunts, in the case of the fox circumstances are different. While we may be aware of the general movements of the animal, the particular tracks which it is wont to follow and the exact places which it makes a point of visiting at intervals of shorter or longer duration, experience of its habits and knowledge of the ground is required to catch it, in addition to the plain, careful setting of a trap; and it is therefore necessary, before actually preparing for its capture, to obtain such insight into its ways and the nature of the covert it haunts as the astuteness of the trapper may supply. It is of no use looking for a chance without having acquired the information necessary, but once having thoroughly learnt all the ins and outs of the fox's domain, one may search for "likely places" with better advantage. We cannot describe all the signs that disclose the existence of a fox's track, which, it must be remembered, is nothing approaching to the nature of a rabbit run on a large scale, or anything of the sort, but is rather some natural track through the covert, so situated as to be suitable and handy for passing through the brake without threading the intricacies of a thick undergrowth.

In other cases, when either a drive cut for sporting purposes, a rough road, or even a dry or wet ditch a foot or two wide and with a width of fairly open ground on each side, runs through the plantation or covert, foxes often when in flight make for these more easily traversed places and continue on them, if not for the whole extent, at least for a considerable portion of it. Sometimes a low bank of earth but a few feet high exists right through the

covert, marking the site of some former hedgerow or boundary. These are very favourite places for, and influence the direction of, foxes' tracks. They are generally pretty well burrowed out by rabbits at intervals along their sides, and consequently, when the conies are plentiful, the more inducement is offered to the varmint to traverse them, either when in search of food and amusement, or when bent upon some marauding expedition towards the opposite end of the covert.

In order to verify one's surmises as to the existence of a fox's run along any of the likely situations named, one must exert careful observation to discover such signs as may be apparent. On search being made, in some places droppings of foxes will appear to be uncommonly plentiful all along certain portions of the track more open than the rest. On further search in such direction as may seem necessary, evidence of the continual passing and repassing of the varmints will be forthcoming in the shape of indistinct and in some instances scarcely discoverable tracks. There always exist along these runs many spots where the varmints, in order to get by some bush, or under some low branches of a tree, are compelled, if they would keep in the track, to follow the same direction time after time. One should be able to discover such as these, and by a little search ascertain the correctness of one's supposition as to there being a fox's run or not.

Occasionally the varmint will have a run leading up to a wall or hedgerow, or even over it, which it is in the habit of using. This will mostly be found at the least likely place, where probably both the hedgerow is high and

not easy to pass, and the inducement to have such an entrance to the cover very small.

These fox tracks through plantation coverts and the like offer excellent opportunities for accomplishing the destruction of their frequenter, and although it is certainly more difficult to determine which places are the best, and having decided upon this, to employ a bait sufficient to lure Reynard, when endeavouring to catch him in plantation or wood, still if success do not crown our efforts, the failure must be put down to insufficient knowledge of the fox's haunts, or inability to till the traps with sufficient dexterity.

Besides this there is a second consideration of some importance, namely, the position of any traps in a covert of some extent, for it must be remembered that the continual passing of a person to visit gins set and baited cannot be accomplished without leaving some track which would most certainly tend to alarm any foxes there might be about. Care must therefore be taken to choose such spots for the situation of the gins as may be within short distance of the outside of the covert; but of course, if no suitable places offer, except towards the centre of the brake, things must shape themselves according to circumstances.

The question of baits is also one requiring attention, for besides rabbits, which are always very excellent lures, there are others which are sometimes necessary to attract the attention of the varmint in passing, and such as these are dead fowls or ducks, a wood pigeon, and in some cases a partridge or similar bird. The former may be placed about indiscriminately, and in certain cases upon the run of the fox, but the latter have reference to cases where, besides

the actual bait to distract the varmint's attention, something likely to draw is also necessary.

The employment of a drag of some sort is very often essential to divert notice from or conceal the scent left by the person attending to the gins, and for this purpose we know nothing better than a dead fowl, trailed by a cord a few yards behind one. It can be easily secured by a string, and proving but little hindrance, is certainly worth what small amount of trouble it entails. It also acts as a lure to entice the fox in the direction of all or any of the traps tilled for his discomfiture.

When setting gins quite close to, or even on a fox's run, one can in the latter instance till with some chance of success, and need not use any bait. In such circumstances, one must of course be quite certain that the site chosen is situated upon a frequently traversed portion of a run, and, being assured of this fact, proceed to search for such place as the vermin must most certainly tread upon to pass without deviating from its path. This determined, the next operation is to set the trap, which must be done with extreme care and dexterity. The gin should lie, as a matter of course, at right angles to the direction in which a fox may approach, and the spring be towards the right hand when one is facing the side from which the wind is blowing. This is, however, merely a secondary consideration, but for preference we would have the trap placed in the position named.

The setting, of course, as far as concerns the actual position of, and mode of covering, the gin, is identical with that already described, and except the recommendation

that any evidence of a gin being set be quite unobservable, there is nothing more to add. The stake, however, must not be driven straight down into the earth, but at sufficient angle to prevent its being drawn up when the chain is pulled at; the reason for this divergence we will presently mention. Too much handling of the gin, &c., is not advisable, and the quicker and more neatly the whole operation of setting is effected, and the less scent left, the better the chance of a catch.

When a bait is considered necessary, the best sort to employ is a freshly-killed rabbit; one that has died a natural death should not be used, as it will have no attraction at all for the fox, and one jagged and torn by any other animal should also be rejected. There are two or three ways of using a dead rabbit as a bait, the most general being to simply lay it on the ground in some place where it might naturally lie if dead, and well in view of any fox passing. Its presence must further be hidden, to some extent, from the exceedingly quick sight of magpies, for should any be flying over, and catch a glimpse of the bait, they are almost certain to fly down, and, while endeavouring to pick out the eyes and otherwise regale themselves on the rabbit, get into difficulties with the traps, and "spoil the whole thing" in the proverbial manner.

Having put in position the rabbit, which should, if it lie on a slant, be back downwards, proceed to set the traps—not exactly touching the rabbit, but at a distance of from three to four inches from it; one above, towards the hinder part of the rabbit, and one below, about half-way along. The coney may be laid out at full length, and if it can be

left firmly fixed, the hind legs should be turned over slightly to show up some of the white under surface of its body. Sometimes it may be necessary to place a further gin or two at each extremity of a rabbit placed in the manner described, or any fox would soon reach it, without "putting its foot in it" at all.

In a second case, when employing a dead rabbit for bait, a burrow should be sought for beside the fox's run, in which there is a hole quite easily seen into from the path which it is expected the varmint may pass along. In this hole fix up a dead rabbit as if it had just entered and stopped without going more than a few inches within the aperture. In order to do this properly, a small peg or two, upon which to support the bait in a natural position, should be stuck up inside, where they will be found of considerable help. If possible, a rabbit just killed should be used, as then it would become stiff in the position in which it was first placed. When it is set up to one's satisfaction, and resembles very well what it is intended to represent, a couple of gins may be set—one about six inches from the tail of the rabbit, at right angles to the direction of the hole; the other at the top of and just above the entrance of the hole, also at right angles to the direction of the burrow, but with the spring pointing in the opposite direction to that of the first set gin. If the burrow be a good one, and the hole in which the rabbit be placed quite easily perceived, this mode of employing the dead rabbit as a bait is often rewarded with a catch. It is quite evident that if the varmint once noticed the lure he would be attracted by it, and, as a result, if the wile have been

cleverly arranged, would fall a victim to the artifice. Another and very excellent lure for a fox is similar to one recommended for the smaller vermin, namely, the setting up of a rabbit in a seat formed by one of their kind under some gorse bush, or among a clump of brambles, or under broken boughs, on, or immediate to, the fox's run. If the seat be already shapely and very easy of notice, the rabbit may be fixed as if lying very close. This is easily managed by using a short sharpened peg, which ought to be first stuck in the ground, and then the bait jammed down upon it, when it will retain the position in which it may be placed. If the seat have an entrance to it both from behind as well as in front, a gin must be placed on each side; and, moreover, both must be exceedingly carefully set.

Sometimes, however, there are no handy and suitable rabbit seats to be found, or if there be any that are formed under brambles, or the like, they are of too large extent; if, nevertheless, one be noticed eminently favourable, and offering no concealment of the bait from any passing varmint, a trap may be set at the entrance to it, the bait fixed up inside, and one or more gins be neatly tilled towards the back of the rabbit, and outside the mixture of briars and dead sticks, intended, probably, to shield the within sitting rabbits from observation. But when no forms of the required nature can be discovered, it may occasionally be not unadvisable to construct one or two of pieces of gorse, by cutting two bunches of it, thickly grown, and sticking them up together in a suitable place, so as to make as natural a rabbit seat as possible. After leaving these a few days the bait may be put in position, and the

traps set with care and neatness, which is a very important element when the catching of foxes is intended.

When rabbits are exceptionally plentiful, and, as a consequence easily captured by foxes, it is sometimes advisable to vary the bait, and employ a fowl, duck, or some other bird of large size, which will prove a superior attraction. It is not necessary when one wishes to bait with a fowl that it should be freshly killed, but on the contrary, any old hen which has died naturally will do equally well, but choose, for preference, a fowl if not quite white, at least with a preponderance of white feathers.

Having obtained the necessary bait, the next matter is to select a site whereat to set the gin, and in doing this, one must not forget to decide upon a place seemingly more likely than any other for a fowl to be discovered at, for it is quite evident that a dead hen in a covert some distance from the poultry house is always something very much out of the common, and likely to put Reynard on his guard. The best way to lessen the unlikely appearance of the trap is, when once the site for the traps is determined, to cut the fowl open down the breast in as jagged a manner as possible, attach a couple of yards of string to its feet, and let it drag after one as soon as the covert is entered, until the place is reached where it is intended to till. At this point, let the feathers fly well about in all directions, then, without allowing the hands to touch the bait in any way, sever the string from its legs, and leave it lying at such place to which it must be first drawn, and which seems the most suitable site for the gins. Having arranged the fowl with a stick in the position it might occupy if a hawk

had mauled it, place the gins all round it, to the number of three or four. More than this will be to no advantage, and if the correct spots be chosen whereon to place the several gins, the fox attempting the seizure of the fowl should inevitably be caught. The traps should be placed inclining to the form of a square, the length of them parallel with the sides of the bait. The setting must on no account be clumsy or hurried, and each gin should be placed in position and tilled with all the care and cleverness of manipulation which can be brought to bear. Hurried work, when the catching of foxes is the aim in view, is of no use at all, for unless each and every trap be set with great pains, and a sharp eye given to the surroundings and circumstances under which it is placed, the baits will be lifted or the wiles remain unfruitful of any capture day after day.

As far as we can judge from our personal experience, it seems quite evident that in such cases, when a fox discovers a bait placed for the purpose of enticing it, it approaches it with but a small amount of caution, trusting meanwhile to its own powers of scent, &c., to make known the existence of any danger. If such be correct—and we are inclined to think it is—then everything in setting depends solely upon the care and neatness with which the gins are tilled. However, in most instances the existence of the gins around the bait is the first cause of alarm, and once having scented them, the fox, instead of hurrying away, takes pains by further search to discover the whereabouts of the dangerous artifices, and having apparently done this to its own satisfaction, proceeds to endeavour to obtain the

bait, with safety, of course, to itself. Sometimes it is able to succeed, but occasionally the trapper's ingenuity proves too much for it. Bearing all these facts in mind, anyone will be quite able to see why we continue to enforce the necessity for extreme care and neatness of setting, at the same time leaving as little scent as possible, to obviate which latter either of the drags mentioned in a former article may be employed with advantage.

That the fox has great determination of purpose is evident, and, in order to attain anything upon which it has set its desire, it will not be debarred through having to run some danger; and an instance which came to our notice shows this to be so to a remarkable extent. On one occasion we set three gins to a bait of a dead fowl, which we tied securely to the lower banches of a small spruce bush. For two or three days no result was achieved, but one morning, approaching the spot, we heard "rattling," and knew we had a catch. To reach the place we had to get over a hedge bank, and, doing so, saw a fox pick up the fowl which had been torn from its position, and trot off through the covert. Two of the gins were drawn, and one bore unmistakable signs of having held a pad, while the ground comprised within the radius of the gin was completely torn up. From this we gathered that Reynard had redoubled his exertions on hearing our approach, and just got free in time to catch up the fowl, getting away with it and the marks of rough treatment on one of his pads. It seems extraordinary that the fox should wait to carry off its hardly gotten bait under such alarming circumstances.

In the event of foxes making a practice of visiting fields

with a view to procure a supply of food, the means to be taken for their capture are naturally very different from those when a covert or brake is the scene of operations. Sometimes more than one varmint are in the habit of frequenting a field, but rarely more than two make a regular practice of it. When, from having seen a varmint several times in succession in a certain enclosure, one is of opinion that it has been accustomed to seek food or amusement there, the first step to be taken is to ascertain as near as possible the exact place where it enters the field; and in order to do so with certainty, a careful examination of the hedge, bank, or whatever forms the boundary, must be made, with a view to placing gins in suitable and likely places. In all probability, if not always, the fox will enter the field at some spot *close* to a gate or gapway, by passing over the hedge-row. Reynard never, under ordinary circumstances, passes through a gateway, or over a gate, evidently considering that it is safer to avoid such places of possible danger, and that, by surmounting the bank on either side, he averts any chance of risk, and is, at the same time, quite able to make a survey of the ground in which the depredations will presently commence. Had the fox any degree of reasoning power, as some affirm, it would surely occur to him that it makes little difference whether he passes through or over a certain gateway; or whether, on the other hand, he jumps over the hedgerow at a certain spot day after day. In either case he is equally open to be trapped for and captured. Consequently, in spite of the fact of Reynard avoiding gapways or gates being evidence of an exceedingly sharp instinct, still, by the

methodical nature of the action, he is palpably wanting in real intelligence.

However, to discover at what point the fox enters a certain field, the best plan is first to make close investigation of the bank on each side of one and all the gates, more particularly on the inner side of the hedgerow, and also upon the top. If one be at the correct place, and has fortunately struck the point of the varmint's ingress, careful and minute search should reveal the tracks, easily distinguishable from any others, while probably some droppings lately deposited upon the top of the hedge will prove the correctness of the opinion.

It is not in every case that the fox enters the field in proximity to a gateway, but rather chooses one or two places as eminently suitable from which first to take a look round, when, if any prey be close to it, it proceeds to such spot and pursues its way accordingly. In the event of there being a large rabbit burrow, or perhaps a hare or so feeding, not to mention pheasants, it will assuredly shape its course in that direction, and suddenly appear to the alarmed animals from that point; but, under ordinary circumstances, it more often than not passes into the field over the hedge adjoining one or other of the gates, and quits it at a similar point.

Having determined to one's own satisfaction the places of ingress and egress, the next thing is to set the gins with a view to catch the wily animal, commencing at the gateways, by placing one upon that particular spot from which it seems most probable the fox will spring on to the hedge. The place will not be more than about

a yard out from the bottom of the bank, and most likely be at some spot where the ground rises into a little mound, or perhaps slopes upwards towards the hedge; it must also be remembered to examine for any tracks leading one to suppose that the choice of site for the gins is well made; and further, to note equally that the top of the hedgerow is a suitable place for the varmint to jump to. The setting must be made with the usual care, and the gins well staked down and covered. One, two, or even three traps may be employed upon the top of the bank, for the purpose of giving the varmint another chance or so, should it unfortunately fail to get caught by the one on the ground, which may be doubled, and a second one tilled, provided a suitable place, and one worth setting at, exist. One of the traps, put upon the top of the hedge, should be placed so as to be as nearly as possible upon the spot where the fox, in jumping up, is likely to put its feet. This gin must be nearer the outer than the inner side of the bank, and in cases where there is a slight slope over towards the outside, it is most advisable to place the one trap upon this slope, setting it with the usual amount of neatness and care. The other trap or two may be placed one on each side of the first, at such places as may seem likely to cause a catch, and be generally suitable. It must be observed that gins placed as described—upon the top of the hedgerow —must be carefully staked down, and trouble taken to see that the stakes hold firmly in the loosely constituted earth which usually forms these banks. In such instances it is not at all a bad plan, when the ground does not

offer much resistance to the stake, to employ a longer one, and attach the trap by means of a chain about 3ft. long. In the event of a fox getting caught in a gin thus provided, it makes the usual attempts to release itself by jumping and pulling, and, in its excitement, jumps or falls off the hedge, and being thus restrained, must inevitably hang head downwards, when it dies in a minute or two. This is certainly rather cruel, but less so than letting the varmint escape with a trap on its leg to die of slow starvation. In some cases it may be considered necessary to adorn a particular place on the inner side of the hedge with a trap also, from the fact of its seeming a likely spot from which the fox, supposing it to have escaped the other gins tilled for its discomfiture, would jump down to the ground.

When one has provided the one or more gateways of a field with the gins necessary to assure the capture of a fox in the event of one passing at the places indicated, they may be left to do their work, giving them at least three or four days to prove the accuracy of one's surmises as to the places chosen being frequently passed over by the varmints or not. If, however, nothing, unfortunately, results, and the cunningly concealed traps remain withont effecting any capture, then we may take it that we are not actually on the right track, and must, therefore, commence a close scrutiny of the boundaries of the field with a view to discover the correct place at which to set the gins, and one likely to be more productive of favourable results.

There are often in the fields adjacent to coverts or

plantations wherein foxes abound certain places along the hedge lying well open to the sun and commanding a fair view of the field, to which a fox may often resort in the early morning, either for the purpose of capturing a rabbit from a burrow at hand, or simply with a view to air himself. In some instances a varmint may come to this spot morning after morning in summer time, and even gambol and play about on the top of the bank for some time. As evidence of this, the presence of copious droppings will be apparent, when one, two, or three gins may be skilfully placed in the spots most likely to secure the vermin.

Fields surrounded by hedgerows, the latter plentifully supplied with rabbit burrows, are often very favourite haunts of the fox when in search of a meal. Under these circumstances it forbears to disturb the at all times easily alarmed conies until they are well out, busily intent upon either their supper or breakfast, as the case may be. As soon as the favourable moment has arrived, Reynard enters the field either with a rush at some spot certain to provide him with one rabbit out of the many he knows to be feeding within a few yards from his place of entrance, or else comes over the hedge gently and without being observed, and slinking round the field quietly, and, if possible, unnoticed, he waits his opportunity to pick up a bunny as neatly and quickly as he can, and either consumes it where he is, or bears it off to safer and less conspicuously situated parts. No doubt on many occasions anyone having risen at a rather earlier hour than usual in order to take a saunter round the place, gun in hand, hoping to knock over a brace or so of

rabbits, has been disappointed at seeing so very few, and those few so wild and scary as to be unapproachable even within respectful distance. This state of things is invariably one of the results of a fox having made his round but a short time before; and it must be remembered that the varmint travels over a great length when upon these marauding rounds, so that sometimes the whole game upon a place, together with the hares and rabbits, will be thrown into a state of alarm, through its perambulation in pursuit of a morning meal.

In such cases, there exists in a field, perhaps, some small expanse of rough brake, consisting of stones collected together during the various processes of cultivation, and placed indiscriminately in the very centre or at one side, overgrown with brambles, gorse, and other low thick cover; or, on the other hand, several trees have been allowed to grow up in a clump together towards the middle, for the purpose of affording shelter. Such places are sure to be visited by the varmint (more especially the first mentioned), in the hope of picking up a partridge or rabbit; and often, when there is very little at any time to disturb them, a fox will lie about in such spots. The outside of these brakes are very suitable places for the setting of one or two well placed traps, baited with a dead rabbit or the like. A spot of sufficient conspicuousness should be looked for—where there is an even place to set the gin, with a little hillock or slight knoll at the back, whereat to place the bait, which should be carefully pegged down, and one, two, or three traps skilfully tilled in the usual manner. Foxes have by no means a dislike for crows, and if one or

two be obtained and strung up by their necks to sticks stuck up in the ground in places where the varmint is likely to discover them, they are sure to be noticed by any passing fox, which will, in all probability, endeavour to obtain the bird and tear it up, or, at least, stop to sniff at it. A trap or two should accordingly be placed in a suitable position under the bait, and, if the choice of site has been well made, a catch will probably result. Of course, it is by no means necessary that a crow be employed, as a magpie or wood pigeon are both suitable for the purpose.

When the systematic trapping of rabbits is carried on in localities where foxes abound, or even in places in the neighbourhood of fox-frequented coverts, the person trapping is often subjected to great annoyance, put to considerable extra trouble, or suffers sometimes substantial loss owing to the poaching propensities of these vermin. Often, night after night, the conies are so frightened that they scarcely quit the security of their burrows to obtain food, and, as a consequence, very few are captured, or, in other instances, the gins set cunningly enough for accomplishing the bunnies' discomfiture are discovered and drawn by foxes; while, again, the eventually captured rabbits are mauled, stolen, and eaten to sufficient extent to exasperate any ordinary person. Reynard, moreover, sometimes commits mischief of a fearfully wholesale nature, while on occasion his misdeeds display to wonderful advantage the lively instinct with which he is endowed. A trap set for a rabbit is more likely to be discovered by a fox than if it were tilled with a view of catching the fox itself; and when the varmint has once detected the presence of a gin,

it must not, so far as our experience goes, be imagined that he is frightened to any considerable extent by the presence of something of a suspicious nature, and, moreover, carefully concealed. We have on many occasions known foxes scratch earth back over not one gin, but eight or ten in the same field, probably with a view to drawing them, as the fact of several being thus sprung would tend to prove; further than this, in instances where baits are employed, the fox will often abstract them without being entrapped, consequent on hurried or careless setting.

We have mentioned the case of a fox's visit where one discovers a rabbit lying near the gin drawn, and the ground round about showing palpable signs of what has occurred, the rabbit, moreover, half eaten and partly mauled. Steps must immediately be adopted to put a stop to such maraudings by catching the vermin committing them. First of all, in the case where a gin tilled adjacent to a hedgerow or bank has had the rabbit caught taken out, remove the remains of the partly consumed capture some fifteen to twenty-five yards from the scene of its destruction, and, having chosen as suitable a position as possible near to the hedge, peg down the carcase with two or three wooden pegs provided with a crook, which are best cut at the time from some bush near at hand. The bait must be fixed tightly to the ground, and care taken that none of the pegs show above the rabbit. The traps must be placed in numbers according to the position of the bait, one in front and one on each side, the springs of the gins all pointing towards the right hand. If there be any room for a fox to place its foot at the

back of the bait, the space thus left should also be furnished with a trap. The setting must be made as before mentioned, with the greatest care and exactness in copying the surrounding state of the ground. In such instances, where the tilling is made on grass, it is not at all a bad plan to deviate from the general way, and cover the jaws of the gin with the square of turf which can be neatly cut out from the place in which the jaws lie when the trap is set. This does away with the necessity of visiting the setting so often to replace the old and dead grass used as covering, and consequently the scent of having been at the place is less likely to be noticed. Care must be observed to drive home the stakes well, and, moreover, in a slanting direction, so that the hold obtained is of the surest. We must mention that when a fox is caught it does not pull at the stake, but executes a series of powerful jumps straight up into the air, which would, were the stake driven in in the usual manner, tend to loosen it, and eventually release the fox. The angle at which the stake is driven prevents this result from taking place.

Sometimes, when one is trapping for rabbits at burrows situate towards the centre of the field, or at other likely spots for capturing them, the rabbits caught will be abstracted by a fox in no inconsiderable number, and although the setting of gins, if done cleverly enough, will often cut short the varmint's depredations, it more often occurs that the fox proves itself far too wily, and not only steals the rabbits as heretofore, but abstracts the baits set for itself. To cope successfully with such daring customers, consider-

able trouble must be taken and a really systematic plan adopted. First of all, say, six traps should be tilled to catch rabbits, that is, with a real view to this end, while, say, three or four more should be set in places as if for rabbits, not with any idea of catching them, but rather with the aim of entrapping any fox which may be pursuing his destructive vocation in search of unfortunately circumstanced bunnies. Besides this, one, two, or three dead rabbits, according to time and means, must be placed in gins as if caught, and a regular cordon of traps set round each in a zig-zag circle, each spring pointing towards a common centre. Such an arrangement of gins requires some dexterity in the setting, and care must be observed, otherwise a finger may get injured. The gin holding the dead and apparently late caught rabbit should lie in the centre of the circle of traps and the rabbit be made to lie partly upturned, and in as natural a manner as possible. This wholesale manner of going to work to trap a fox should, if properly carried out, effect its purpose, where the usual and less extensive mode of procedure fails.

Very often, in localities where foxes are more than usually plentiful and but little or ineffectually hunted, the young are to be caught at the cubbing earth or at a holt adopted subsequently, owing to the first having been discovered. No animals, we believe, whether vermin or other, clear out more quickly from their places of litter, on discovery of their situation, than the fox; and consequently, when once you have detected, through the means of a terrier able to surely wind and fight the varmint, or perhaps by personal observation, the existence of cubs getting well on towards

three parts or full grown, steps must be immediately taken to capture the vermin. In the event of having the necessary gins present, they may be immediately set at the entrances to the several holes, care being taken to till at every one, and not to overlook the existence of any. The hands should not be employed more than is absolutely necessary, and the setting must be to all intents an eminently "kinly job."

If, on the other hand, one have no materials at hand, the earth must be thoroughly stopped, to prevent either ingress or egress, and a speedy return made to obtain the necessary gins. It is but little good employing other than stones to stop the holes, and these may be further improved upon by the insertion of a good stiff and thickset branch of gorse or thorn first, and the hard driving in of the stone afterwards. The traps must not be placed more than an inch or two inside the holes, while no opportunity for the fox, once caught, to obtain a leverage to aid in forcing the gin must be allowed to exist. We would advise, if the holes be not very numerous, the setting of two at each, one exactly at the entrance, the other 18in. to 2ft. outside. When it is known that the cubs are getting to a good size and acquiring some of the experience of life, it is certainly a safer plan to dig them out—sometimes, however, very impracticable or even impossible, at others a matter of little or no trouble. No inexperienced hand should attempt to lift out the cubs, for only one who knows how to take hold of a fox can do so without getting bitten.

Curiously enough, the fox, when tamed, generally forms an acquaintance ending in strong friendship with a cat or

two, and further, when wild and uninitiated as to the merits of living pussies, has a peculiar liking for their dead bodies, and solemnises their funeral rites by rolling, jumping, and gambolling around the carcases. Such eccentricities must, of course, be taken due advantage of, and it is an excellent plan to drag to a suitable site the bodies of any feline poachers which may be killed, and set gins around them. The carcase ought to be pegged down, and the gins placed at intervals around at a distance of from 1½ft. to 2ft. from it. We have also heard, but cannot bear personal testimony, that the dead body of one of their kind will also attract the varmints in a similar manner.

When in Germany, a few years ago, we were shown a trap used by the foresters in Bavaria to take foxes during winter, and were further told that it had been in use many years. The description tallies with the "new" American fox trap, an enlarged edition of the similar mousetrap, and although the fox trap is said to be both new and American, it appears to be neither one nor the other; however, we have observed advertisements and illustrations of it, and have duly admired a badly stuffed fox placed between the jaws of one exhibited in a shop window near Charing Cross. Judging from what we saw, the trap should catch a fox under any circumstances, which, unfortunately, it will not do, and only in one case is it of any practical value. We need not go into any of the several reasons why the trap cannot be employed with a view to catch foxes, except during winter, when there is snow on the ground; suffice it to say that anyone at all acquainted with the animal will very quickly see that an arrangement constructed upon

such a plan cannot prove to be other than a failure. The price, we believe, of one of these weapons of such murderous intent is 3 guineas (a very important consideration), while the strength of the trap, when the so-called jaws fly together, is sufficient to break a fox's back or a man's arm should either happen to get between them.

In winter time, when there is heavy snow on the ground, this trap can occasionally be employed to advantage, for during such times the varmints are often hungry enough to lose that discretion which is a noted characteristic of their kind, and run many risks which they would not were their hunger less acute. When the snow begins to fall, procure a large piece of "high" flesh, a dead fowl, or similar effectual lure, and having proceeded to a spot where the foxes are considered as sure to pass, or where they generally frequent, lay the trap down, and, having secured the bait to the trigger wire, set the trap, but the utmost care must be taken in so doing not to allow one's arm or hand to be caught between the jaws in the event of a slip taking place. The trap, owing to mode of working—by breaking the back of any fox caught—does not require fastening, and should be left to become covered by the falling snow. Any varmint passing, and to which food is exceedingly welcome, is certain to wind the bait, and after scenting about, to commence to scratch down in order to obtain the desired food. Immediately it moves the bait with its foot, it springs the machine and is caught. Nevertheless, the trap is even for this purpose very well replaced by the gin; instead, however, of placing the bait on the trap or traps, it is set on the ground, and the two gins,

which are necessary, set above it, when the effect is the same as before. As to the American trap, it is exactly similar to the cat trap, described and illustrated in a former chapter, with the exception that it is several times larger and stronger; but, as before mentioned, the arrangement is so extremely unpractical that it cannot be used with any chance of satisfaction.

When foxes have attacked poultry, they but rarely repeat the experiment within a short time, and we would therefore simply advise that ducks and fowls, kept in localities where foxes are numerous, should be provided with roosting places absolutely secure from vulpine ingress. However, where pheasants or other game are hand-reared in coops, the foxes will continually come round them at night, hoping, no doubt, to secure a tasty young bird or so. When this happens to be the case, a few gins should always be set every night close to the coops; the tilling need not be very careful, but sufficiently so to be efficacious in the event of a visit.

Young pheasants and partridges are particularly liable to be captured by foxes, and more especially at night when they are at roost. Obviously in such cases any means taken to catch the vermin may also unfortunately effect the capture of some birds too, and consequently, means must be taken to scare the vermin away. One of the best plans usually adopted is to obtain old pieces of tin, and, having cut them into jagged form, fix them each in a stick about 1ft. or so long; fix them up about the ground where the birds are likely to be. They act in this manner as imitation traps, and when further evidence of their existence is given by using some such offensive smelling substance

as tar to daub about them, they often are excellent preventives of foxes killing and destroying young game birds. Lanterns, too, are often suspended in pheasant coverts for similar purposes, some advocating revolving lights, others coloured ones, and such similar means, the idea of which is, however, rather far fetched. The tins, nevertheless, are very useful, and so, in fact, is anything of similar nature, in quantities sufficiently large to alarm a fox on a midnight marauding expedition in either pheasant or partridge preserves.

From an economic point of view, with regard to hunting, a fox trapped or caught should never be killed; but if for some reason this become necessary, it is as well, we opine, that it should be done in a proper manner. The best way, if the fox be in a trap or fastened up, is to obtain hold of the brush, then extend the animal, so that it cannot move materially, and carefully and deliberately strike a heavy blow with a stick, just behind the back of the nose. This renders the poor beast perfectly insensible, and then it can be killed outright by two or three succeeding blows, or be hanged.

On the other hand, if one desire to capture Reynard alive when once he has got entrapped, the best way is to be prepared before visiting the traps with a stick about 6ft. in length and sufficiently stout, and having a fork at the smaller end in as near as possible the shape of a U. Sticks with a sharper shaped fork are not so useful and less easily employed in the direction required. The sides of the fork ought to be about ⅛in. in diameter, but not more, sharpened slightly at one end, about 6in. apart at the open end, and from 9in. to 12in. in length.

The forked stick being provided, it should be carried when visiting the traps, and if one come upon one of the varmints caught, it should be approached as near and safely as the circumstances will permit, and the fork of the stick pushed over the back of its neck, close behind the ears; by pushing the stick downwards, and, if necessary, into the ground, the fox is easily secured in such a position as to render the moving of its head, for the purpose of biting, an impossibility. If the sides of the fork be not of requisite length and evenness, the varmint will often manage to get its head out from between them before it can be secured, so that it is necessary to observe that a nicely formed fork is not to be replaced by a carlessly cut one. If one wish to do without the fork, or cannot obtain a stick of the sort described, and one be pretty well experienced in handling Reynard, a plain long stick may be used, which, if laid over the varmint's neck, will hold it sufficiently safe to allow one either to "cope" it or tie the legs together.

When the fox is once secured by the requisite forked stick, in order to still further better the position of the capturer, it should be grasped by the tail and extended to its full length, when it may again be pegged down in the position desired, by pushing the sides of the fork of the stick into the ground, as far as they will comfortably go, without hurting the varmint, just at the back of its ears, but not tight down upon them.

This completed to satisfaction, and the head of the fox rendered quite immovable, either the fox may be killed or its mouth secured, as may be desired. If the varmint's life

is to be spared, it will be necessary to carry it to some more suitable place than the present one, and, in order to do this, it is advisable to take steps to render this an easy operation. The mouth may be securely coped if one be sufficiently expert to accomplish it alone, but, failing this, the fox must be tied up so as to render any attempt at resistance futile. The best and surest way to attain this is, first of all, securely to tie together the hind legs of the animal with a piece of stout cord, which should be always carried for this purpose, care being taken to do the tieing strongly and safely, and, at the same time, without hurting the fox. This satisfactorily done, bring the two hind legs forward, and, having tied some string securely round the loose leg of the capture, push this one between the two hind legs below the fastening, and attach it carefully to these latter. The three limbs may now, in order to make security doubly secure, be all tied one to another. If one be quite positive as to the safety of the tieing, the fourth leg may be relieved of the trap, but, unless one be certain, the wiser plan is to leave it on, as then, in the event of the string slipping, one has something to depend on, because a fox cannot run fast enough with a gin to get away from a person chasing it.

For our part, we always carry a light sack wherein to transport any caught fox, as we consider it handiest; it will probably be found necessary to tie the fox's mouth up, if it be not properly secured, otherwise it will defy all efforts to get it into the sack. If the mouth be effectually bound, the operation is sufficiently easy; but if the uncommonly active jaws be only temporarily secured, the best way is,

after having suitably arranged the bag for the reception of Reynard, to push him in by employing the forked stick to lift him by his legs. As soon as the unhappy beast is in, it will manage to scramble to the farthest extremity of the bag, when the foot or stick laid across, close up to it, prevents any movement until we have tied up the mouth of the sack, leaving sufficient above the tieing by which to carry it home.

Directly one reaches home the fox must be shaken out of the bag on to the floor, when one person must by means of a stick—the one we have in use with a fork will do—hold it with its head flat on the ground; a second should now seize the varmint, grasping one ear and as much skin adjacent to the back of the mouth as possible in each hand. This will, if the jaws be unsecured, force them wide open; in this position the animal cannot bite. A collar, with two chains, one on each side, can now be easily fitted on, and the person holding it is at liberty to throw the fox forward, while two people extend each of the two chains. When the varmint has been previously disabled, the adjusting of the collar, &c., is, of course, more easily effected, which done, the coping can be cut on the top. The trap, if still on, must be taken off, and, if necessary, any means adopted to hasten the healing of the wound or pinch. The best way to keep a fox, under the circumstances, is to obtain a small barrel—a potato barrel, if possible—and secure the two chains, one on each side, and just over the edge of the barrel; the chains, of course, should each have one or more easily moving swivels, and must move on the collar, not be permanently attached one on each of the

opposite sides, otherwise the fox may strangle itself. The best plan of feeding is to give it nothing during daytime, but place some water and a dead rabbit or two just within reach at night. A fowl or some rats may do for a change.

CHAPTER XXXVIII.—GROUND VERMIN.

Rats.

ALTHOUGH rats have acquired, not only in this but in other countries, a character for rapacity and destructiveness of the worst type, still they are not wholly without redeeming qualities; while the natural history of the animal, upon close investigation, reveals many traits of great interest, and, as far as intelligence and cunning are concerned, it is as well provided as any of the vermin yet considered.

The rats of which we shall take note in this chapter are the black rat, the brown rat, and, as a natural consequence of noticing the latter, the water rat, for very often the brown rat adopts similar habits to those of the water-vole, and this comparatively speaking harmless animal receives credit for the misdeeds of its more numerous congener.

The Black Rat, now become nearly extinct in the United Kingdom, occupied, before the advent of the larger, brown kind, the same position as the one now so annoy-

ingly plentiful, and although rarely noticed, it is still occasionally found in odd places. Its name is due to the difference in colour from the common one, its fur being of a uniform greyish black. In appearance it bears some resemblance to the mouse, the nose being long and taper, while the upper jaw projects considerably above the lower one, and is provided with a large number of long black hairs, which protrude through the regular fur. In size it is about one-third less than the better known rat, and although fierce and daring enough in its nature, it stands but a poor chance against the greater strength of its congeners. Various opinions have been given as to the probable source whence this scourge came to these islands, but the question remains at much the same point as when first broached, authorities agreeing only that it is not indigenous.

The black rat breeds many times a year, the number differing in individuals, while from six to ten are brought forth at a birth. During the breeding season very violent combats, often ending in death, take place between the males, and the noise made by the little animals when thus engaged is very surprising. The young are born with closed eyes and totally devoid of any hair or covering. The habits of the black rat are similar to those of the brown rat, and being very nearly extinct, they need no more than a cursory notice. The skins are considered of some value, and rat-catchers accordingly make short work of any colony which they may come across. Although it has nearly died out in this country, it still swarms in many others; but wherever the brown one is introduced,

it soon multiplies to such an extent that the other quickly disappears before its ever-increasing hordes.

The Brown Rat is also called the Norway rat, for what reason we cannot say. Norway is least likely to have furnished us with the animal which, above all others, is undoubtedly the greatest nuisance and the most destructive pest. It seems pretty clear that it emanated from a warmer and more genial climate than ours, and, further, that its arrival took place about the beginning of the eighteenth century. It is of a greyish brown colour on the upper and outer, and a greyish dirty white on the opposite surfaces of its body. In this *mus* the muzzle is elongated, as in the other kind mentioned, but the upper jaw does not project to the same extent, while the whiskers are softer and less prominent. The average size of a full-grown rat is from 10in. to 11in. without the tail, which measures from 8in. to 8½in., thus being about four-fifths the length of the body; the ears are very prominent, and in a full-grown specimen are about three-quarters of an inch long; the tail proves, on close examination, to be a wonderfully constructed appendage. The female is slightly smaller than the male.

The rat is well adapted to the course of life it follows, not only by its physical qualities, but also by its character. It is fierce to a degree when attacking or attacked, and at all times excited in the pursuit of its food, or when bent on the mischief it continually commits. Its voracity is considerable, and few animals have more elastic capabilities of stowing food without inconvenience. Its food is of every sort and shape. Its chief means of subsist-

ence, however, are found in grain, and in nearly all the products in which grain is employed. Meat, also, of every kind, while vegetables of many sorts, together with every conceivable substance, from old leather to green peas, form at some time or another food for the *Mus decumanus*. Not content with such a scope for the acquirement of provender, it is also of a cannibalistic turn when one or more of its kind are injured or in difficulties. In the event of one being wounded, whether by combat or otherwise, the rest eagerly fall upon it, and, if the spot be not favourable, convey it to a more convenient place, where they tear it in pieces, and, having consumed it, perhaps treat its conqueror in the same manner. Again, if one of their number should get caught in a gin or trap, instead of taking steps to effect its release, they will sometimes fly at the unhappy animal, and, tearing it limb from limb, dispute upon the remains. Strangely enough, the male rats far outnumber the female, being numerically nearly double, and to this fortunate circumstance we owe the fact that rats are not more numerous than they are.

The rats which inhabit the network of sewers in the metropolis and other large towns are of the same species as those which frequent barns, houses, and corn ricks, and at times, during the year, hedgerows and the borders of ditches and rivers, although the former are of considerably larger size, altogether fiercer, and exceed what we call the "barn" rat in voracity and boldness. The rats frequenting sewers, it is to be remembered, usually remain in their unsavoury localities all their lives, and this goes to account for their greater ferocity. The rats, on the other hand,

which frequent houses in rural districts live a more varied existence, and some of them betake themselves in spring time to the hedgerows, while others find agreeable abode along the banks of rivers, and beside ditches and ponds, mostly in the burrows of their relatives, the water-voles, which they oust with but little ceremony.

If there be a particular breeding season, it is from the beginning of spring to the commencement of winter, about three-fourths of the year. The season is, however, indefinite, for all through the winter young ones are met with in odd places, generally in a conveniently warm situation. If we may judge from the tame white ones, the brown rat must be an animal of wonderful fecundity, for an excellent authority, who has bred many hundreds of the pet rat, asserts that they breed six times in the year. What an enormous number of rats, then, must go to the average produce of one doe for two years!

Rats which form their nests in and about hedgerows, on the banks at the water side, and about fields, construct a shelter of a different kind from those whose haunts are in buildings. The former first select a secluded situation where warmth, dryness, and other necessary attributes of a rat's nest are present, and burrow, scoop out, or adapt a suitable hole, at the far end of which, where the passage is widened out, the female forms a nest, employing various substances, such as soft leaves, dry grass, ferns, moss, &c., together with any wool dropped from sheep, which are neatly manipulated into a nest of circular shape, and if not wholly covered, so deep in its construction as to nearly close over the dam and her numerous progeny.

In town or country houses, in corn ricks or fodder stored in barns, or in and about the miscellaneous collections which often litter up granaries and outhouses, on farms, or in the last season's clip of wool, the rats are of a more aristocratic turn, and seek for pieces of rag of various colours, paper, fur, feathers, &c., wherewith to form and line their nests, which, however, are of the same shape as those of their rustic congeners. In these the young are reared until sufficiently mature to provide for themselves, which is at about two months and a half to three months old, when most of them are themselves able to breed. The first and two or three following broods are not very numerous, ranging mostly from four to six or seven, but as soon as the rat attains its full size, after the first winter is past, they range from eight to fifteen, rarely being fewer and often more. We have often found nests of seventeen or eighteen at a time, and many instances have occurred of twenty and upwards. Rats continue to breed for three or four years.

The female when rearing a family is devoted and courageous, ready at any moment to lose her life rather than see the capture or disturbance of her progeny, springing at man, dog, or ferret with a fierceness and determination only equalled by her agility. The male rat, however, has none of these qualities, and takes no interest whatever in his offspring, except as far as concerns eating them. If he discover the situation of the female's nest, he is always on the look out for a favourable opportunity, during her enforced absence in search of food, when he may step in and quietly consume his numerous family. Sometimes, however, he may doubly "put his foot in it" when seeking

to intrude with bloodthirsty intent, and may meet the female, who, fully aware of his design, waits for no apologies, but flies at him with a fierceness sufficient to induce his precipitate flight. The broods of one female remain for the most part in company until the females begin to breed, after which the circle breaks up and each pursues its individual course.

Rats live in colonies, in much the same way as rabbits, but owing to the nature of their habits, not to the same extent. As soon as it is dusk and the places of their nightly mischief are quiet, they issue from the retreats where they may have remained sleeping during the day, some seeking materials for nests, others improving the strategical value of their runs, but the greater number bent on satisfying their inordinate appetite. Each colony (we speak now of barn and house rats) spends the time of repose in close companionship, or sometimes snugly huddled up together in a batch, separating one from another only when their appetites move them so to do, or to attain certain things which are only within reach in the daytime. Rats are by no means selfish about any provender which they may individually obtain, but on the contrary, in the event of a certain member of a family discovering a delicacy, it either fetches its friends and relatives to the spot or conveys the tempting morsel to the general meeting place during the day. Hence rats will often put themselves to extreme trouble to transport such unwieldy articles as eggs. The manner of conveying them is very interesting, but is so well known as scarcely to need description. Rats frequenting hedgerows and banks, of course, cannot adopt this mode of living, and repair to the burrows

they have constructed at such time as they may deem rest or sleep needful—the day not being with them synonymous with quiet and sleep, as with those inhabiting buildings.

To enumerate the various substances which may serve as food for rats is not necessary. We limit ourselves to pointing out their chief victims of a furred or feathered kind. First of these may be mentioned poultry, which at all times and at every stage suffer more or less from their voracity. Whether it be fowls' or ducks' eggs, chickens or ducklings, is immaterial. The piteous tales that have been told, the equally discouraging ones which we hear every day, and the doubtless no less annoying ones to be recounted hereafter, of valuable sittings and promising chicks devoured and mauled by rats, are provoking enough to try a saintly patience ; and yet how few do more than grumble at their ill-luck, and never attempt to prevent a recurrence of the disaster or take steps to curtail the ravages ! Not only poultry, but pigeons and pets of various sorts, are for ever falling victims to the vermin ; while many a gamekeeper, who has prided himself on the strength of his young pheasants, has had his visions of a grand October day's sport spoiled by the rats in a single night.

By the pond and riverside they are no less mischievous, for, in addition to waging a war upon the inoffensive water voles, into whose homes they have intruded, they kill many a young fish and water bird, besides honey-combing the banks with their tortuous and extended ramifications. In the hedges, too, they are depredatory, killing multifarious birds, destroying all kinds of eggs, game and otherwise, besides any young partridges, pheasants,

rabbits, or hares which may fall into their clutches. Taking all these things into account, the rural rat is certainly not the least obnoxious of the vermin we have discussed.

The town rat, though no less destructive and mischievous, has one or two redeeming qualities. Not that they are sufficient to warrant any protection of the animal; but it is only fair to remark that, were it not for the countless number of rats, larger in size and fiercer in nature, which inhabit the sewers of the metropolis and other cities, the drainage system upon which we pride ourselves would be found of little avail to carry off the various substances other than actual drainage which continually, from one cause or another, find their way into the sewers, and that for the disposal, or rather consumption, of these, we are wholly indebted to rats. But, and there is always a *but* to facts of this kind, when individual rats are not content to confine themselves to the sewers, but penetrate to the higher drains, and eventually, by dint of perseverance, work through into our houses, allowing gases of a deadly nature to penetrate our dwellings, then the case is very different. For all this and a great deal more are the vermin responsible, and for our part, we see no reason why we should not destroy all the rats outside the sewers, and restrict those that are within to the precincts beyond which they are an insufferable nuisance.

The rat is peculiarly adapted by nature to accomplish an enormous amount of mischief, and at the same time to avoid the danger likely to accrue from its boldness. For its size it is wonderfully fleet, and its fleetness is assisted by unusual agility. For descending surfaces having

great slope, and even perpendicular walls, it has a peculiar construction of its hinder feet, which it can at will reverse from their ordinary position, and thus be capable of laying hold of any inequalities which may exist, and it can support itself until the fore legs have again obtained a purchase. The reverse of this movement takes place when the rat ascends a perpendicular wall sufficiently uneven to admit of it. Its fleetness, too, when endeavouring to escape, and the consummate agility with which it traverses narrow ridges, and dodges from one spot to another, are great aids to it when attacked by a dog; while the brave manner in which it defends itself to the very last moment, whether against its canine enemy when captured, or the ferret seeking its destruction within the intricacies of its ramified dwelling, is always worthy of admiration. True, there are rats to be found of cowardly disposition, but they are very few.

Before considering the means by which rats can be caught and killed, it may be well to remark upon the great advantage the vermin have in a sense of smell of exceeding acuteness, and, moreover, like nearly all other vermin, a great fear of the scent of human beings. In the war of extermination against rats we would, therefore, impress upon anyone so intent the absolute necessity of employing the utmost care. As soon as instinct tells of operations of extent and determination against them, rats become extremely wary, and, before commencing the employment of traps and poisons, some means should be adopted at short intervals to clear off the ringleaders, and thus leave the rabble without guides or advisers.

There are everywhere a certain number of rats which, it will be noticed, on careful observation, are more daring, crafty, and agile than the rest, and are apparently the first to commence mischief in every direction. Now, before attempting the destruction of any number of rats, we need scarcely point out that if one be not already in possession of one or more good rat dogs, endeavours should be made to obtain a "tyke" of surpassing excellence as far as these vermin are concerned, without reference to outside looks or trueness of breed. Not that there are not good well-bred dogs; but what we mean is that gameness and an "idea for a rat" should be the first—and only—consideration.

The destruction of rats in and about outbuildings, corn-ricks, &c., can be commenced by going round every evening once or twice. Each building may be visited in turn, the door being first of all quietly unfastened, and a dog let in suddenly to take his chance of any being on the ground, while the man should be provided with a stick and also (we should advise, and generally carry) a bullseye lantern, with a strong light, by which one can notice any rats going up the corners of the wall, or which may be lying still, as they often do when suddenly confronted with danger, when they should immediately receive a quietly given, well-directed blow. Rushing about and indiscriminate hitting are of no avail. In granaries and barns infested with rats the vermin often have a regular track up and down the corners of the walls, and, in order to prevent the number escaping which are otherwise certain to do so, some small pieces of board, about a foot

wide, having the form of a quarter circle, should be cut to the shape of the corner, and fastened up, one in each, sloping downwards at an angle of about 45deg. When descending the wall, rats, if they get on the board (which, by-the-by, must be smoothly planed), slide off and fall to the ground, in all probability without any injury to themselves. If these pieces of board can be easily supplemented by pieces of glass of smaller size, all the better, but any nails used to support them must, if situate toward the outer portion, be placed beneath the glass. In some instances these embellishments of the corners of outbuildings will be found excellent for preventing rats from getting away.

If it be intended to employ traps as well, there should be plenty of them strewed about, unset if gins; or tied up, if box traps or those working on similar principles.

Ferreting rats out from buildings and killing them with dogs, &c., unless properly carried out in a determined manner, is a very uncertain mode of killing, and its only use is to bustle the vermin about and make them scared; but, on the other hand, if the work be done thoroughly, then it rarely fails to leave its mark. In order, then, to make the business productive of beneficial results, a systematic raid must be arranged and carried out. Of course, the chief thing is to have a good lot of ferrets well up to their work, and at the same time large and strong enough to show to good account in the many fights which they will have to engage in. One should have a number of ferrets according to the extent of ground they will have to spread over, and it is best to obtain about twice as many as one

wants to keep going at a time. One can thus at intervals pick up any apparently becoming lazy, and substitute the same number of fresh ones, eager to commence work themselves and enliven the rest. There must also be a fair sprinkling of dogs, but not too many, nor any other than those which are really steady to their work and not unduly excitable, for nothing is worse and more injurious to any chance of effecting good results than a cur running hither and thither, without doing more than yelp and distract the other dogs' attention. A good number of people should be got together and a plentiful supply of means wherewith to kill any escaping rats; nothing is better, in our opinion, than a good flat shovel for this purpose. If any outlying exits of drains in any way connected with the parts being ferreted exist, they should be provided with wire eel traps, which are sometimes used as rat traps under ordinary circumstances, but are of little avail; however, when properly fixed, under the conditions named, they often catch a good many. One must be careful to look at them continually, otherwise a ferret might get in, and if among five or six rats would have rather a rough time of it. In order to make this wholesale ferreting about the buildings a success, an entire day should be devoted to it, commencing early in the morning, and as it will probably take place in autumn or winter, it is necessary to take up the ferrets at from two to three o'clock. Corn-ricks, when rats unluckily have taken up their abode therein and are devastating them, should be immediately cleared out by ferrets, and every possible means of access to rats stopped. If ricks be built simply on the ground, then constant trapping and

ferreting are the only means to alleviate or put a stop to the mischief.

When it is desirable to extirpate rats which have adopted a hedge for their abode, they can, if the holes of entrance and egress be discovered, be trapped by using a small sized gin at each hole. The setting of the gins must, of course, be carefully effected in accordance with instructions which we shall presently give. Or, on the other hand, ferreting can in such cases be resorted to with beneficial results, two or three good dogs and active ferrets being necessary. We need, however, scarcely enter into any details as to how to proceed either in this instance or when the rats are by the water side, whether of ponds, ditches, or streams.

Before proceeding to discuss the relative qualities of the various rat traps which can be employed to advantage, we must call further attention to the great powers of scent possessed by the rat, and, moreover, the aptitude with which it takes alarm at anything in the least strange or unobserved by it before, but above all, the fear it betrays of anything giving evidence of having been lately handled by human beings. It is thus evident that not only is it necessary to disguise any scent left through handling traps, or from their lying adjacent to anything unknown to the vermin, but the scent of the hands, when setting the traps, should be replaced by some odour sufficient to destroy the other, and at the same time enticing and agreeable; boots, too, should be redolent of the same, so as to lure to the traps and gins.

Various substances can be employed for the purpose with advantage, especially scents of some kind, always strong,

and in the inhalation of which the vermin appear to delight. It is difficult to lure them with food in the first instance, and, consequently, if we would put them off their natural caution, something penetrating in its effects and unknown to them, but at the same time agreeable to their sense of smell, must be employed. Two favourite scents of rats are oil of aniseed and essence of musk, both powerful and not objectionable as far as we are concerned. Many others, more or less fanciful, are recommended, as well as mixtures of several essential oils. However, the two mentioned are very efficacious and not at all expensive. A few drops of either should be allowed to fall on some rag or cloth, sacking if possible, in the neighbourhood of the rats' haunts, until it is thoroughly impregnated with the odour, when it should be left in proximity to some good rat holes —good as affording a free supply of the vermin. Neither the hands nor any part of the human body should be allowed to come in contact with the lure, except these be first deprived of their scent by rubbing well with oatmeal over which aniseed oil has been previously sprinkled, the repetition of which at intervals obviates any chance of rats discovering the smell.

The effect of these "draws" is to entice the rats to them night after night, when, after due time, one can commence to feed them on the same spots, and their becoming familiarised will lead them to the consumption of such delicacies as one may provide in the shape of tallow, cheese, meat, and the like. In time, when these are nightly consumed, poison may be substituted, or the dainties may furnish the tempting morsel to entice the now unsuspecting

animals into some of the traps of which we shall presently give details. This mode of capture, however, requires care, patience, and a certain amount of quiet not always possible, and therefore we give it but a passing notice.

The use of poisons, of course, is rather a bad remedy, but, as far as rats are concerned, it is by no means indispensable, and there are many poisonous mixtures, some good, others indifferent, and a great many bad and useless, from which may be chosen one or two of value. In dwelling-houses the use of poisons is especially undesirable, but with care there is no reason why some of the preparations may not be employed, and certainly when the poison is only deadly in the case of rats. We once obtained from a ratcatcher frequenting Leadenhall Market a rat poison of singular efficacy, which we have since used continually with invariable success, and which we subsequently ascertained to be "Barton's Rat Exterminator," sold by T. C Cole, 53, Blackfriars Road, S.E. It is made up in small round boxes at 1s. each, and, according to the directions, one must simply remove the lid, and place the box about 2ft. from the holes or runs. The rats during the night steal away the box to their haunts, and the whole family will partake of its contents, most of them dying in their holes, but not causing any unpleasant smell through decomposition. If one be careful to avoid touching the boxes, the rats will convey them away, if not the first or second night, certainly the third. One advantage of this poison is, that in the event of a cat or dog eating it, or consuming the body of a rat destroyed by its means, it will almost instantly vomit all the poison, which, as far as these two animals

are concerned, is of a strongly emetic character. When employed for killing rats in corn ricks, this exterminator should be placed as it is in the box in the holes of the thatch. It may be as well to remark that a preparation is made for mice which is equally efficacious.

For ordinary poisoning purposes, to be set down about barns, granaries, and other outbuildings, and corn ricks, a very good mixture can be made by taking 1oz. of nux vomica, to which add 3oz. of common treacle, then mix them well together, the former having been first finely powdered. Drop in some few drops of oil of musk or aniseed, or both, put them with 1lb. of flour into a mortar, and work the mixture well up, which, satisfactorily effected, cut up 4oz. of not too stale crumb of bread to squares of about $\frac{1}{8}$in., and carefully work the whole ingredients together. The quantity is sufficient to cut short the existence of from thirty to forty rats. In the making, neither the hands nor any article touched by them should be allowed to come in contact with the ingredients. When finally mixed, we should prefer to put the preparation in small wooden ointment boxes, which can then be placed in correct position in the haunts of the vermin.

A poison of similar nature is made by boiling 4oz. of the nux vomica in three quarts of water until the three become but two, when 2lb. of treacle should be put in, and the whole well stirred. It is, when cool, ready for use, and should be put about granaries and other buildings, on the tops of walls and rafters, and in suitable situations by corn ricks, in small earthenware pans.

In addition to these two preparations for poisoning rats,

there are a great many more, some, however, so extremely deadly as to render their employment a source of anxiety, while others, instead of being poison to the vermin, are much esteemed by them as food.

The trap most generally to be adopted is naturally the gin, as it is applicable in nearly all cases, besides being a handier one than most of the others, which it can, if not with benefit, at least very well take the place of. The gin constructed purposely for rats is sometimes of the same size as the one intended for such vermin as the stoat and weasel, and is occasionally even smaller; the size, however, need not be so much an important consideration as the fact of its working well, this comprising ease in "springing" and a firm but not sharp snap. Those little, badly made, exceedingly inferior gins termed bird and rat traps, which nearly every ironmonger in the kingdom sells, chiefly to boys bent on "cock-sparrow" catching and similar exciting enjoyments, are of very little use, and although some will catch and hold a rat, still they are as likely as not to remain undrawn with the weight of twenty of the vermin on the plate, or, if they act, fail to hold the animal which should be caught. The price is, in most cases, about 5s. 6d. per dozen. Lane, of Wednesfield, Shave, of Birmingham, and Bellamy, of Wolverhampton, make excellent rat traps, No. 3 of the first-named being good in manufacture, and decidedly moderate in price; it is 2½in. in the jaw, has a bow spring, and is fitted with a good chain and swivel; the price, 12s. the dozen—by no means dear, considering the advantage one has when using a good and well-made trap. The latter makers turn out two sizes of gin, one a 3in. small vermin

trap, well made and finished, exceedingly easy to draw, and fully equal to the first-named, at 12s. 6d. the dozen. There is, in fact, little to choose between the two. Shave also makes a bow-spring rat trap, with 2½in. jaws, a shade less highly finished than the 3in., but still a good article, at 7s. 6d. the dozen. These are certainly the best we know of, and if they be used as well and handily as they are made, no one can wish for better. These gins require, unless when employed within doors either of a barn or similar house, to be provided with a stake, suitable in size and make as already directed in a former page. Before commencing operations the gins should be dipped for, say, ten seconds in boiling water, not longer, a stick being employed to lift them out. This operation removes any scent of oil or handling left upon them, and they will, moreover, dry of their own accord in a few seconds. Then, when all have been thus treated, remove scent from the hands by means of some oatmeal and aniseed oil, in order that a free use of one's fingers can be made without spoiling the chances of success. The several parts of each gin requiring it should now be oiled with a mixture of neatsfoot and aniseed oils, and the traps be everyone fastened open by binding wire over the spring close to the jaws. One can then go round the buildings which it is intended to work in, and place the traps all about where the rats mostly commit their depredations.

In about two or three days the vermin will have become sufficiently acquainted with the iron engines introduced in every direction, and one will be able to notice them running indiscriminately over the now harmless gins, which can

forthwith be set to catch them. We should not advise the employment of baits, except under certain conditions, when using gins, but the traps should rather be set in any runs or places where the vermin make their paths from one part of the buildings to another. If there be any place where a stray wisp of straw or hay has remained, a trap may be set under it, the straw being put as little as possible inside the jaws, and if using any in covering these, at right angles to the spring, so that when the trap is sprung the straw is raised upon the rising jaws, and does not get between them. The same remarks hold good in the case of hay. The most likely places are upon the tops of walls, in hay lofts, on the rafters of granaries and all about the corn, behind any barrels standing near the granary walls, and in all such similar spots. One proviso, however, is, not to place them where fingers of other persons, fowls' legs, or what not, are likely to intrude; and if one conceal the gin either under corn, hay, or other means of hiding, let people be warned against feeling for that which might lead them into disagreeable complications with a rat gin.

The trapping of rats along hedgerows and water banks is similar to catching rabbits, only on a smaller scale; the runs must be determined upon, and the traps tilled adjacent to the holes, staked and covered in the orthodox manner, but in numbers sufficient to provide every hole with a wile at its entrance. Rats established in corn ricks are not easily trapped, but only those ricks not mounted on staddles need suffer, as the removal of any possible means by which the rats can regain the rick, once having left it—and they must do so to obtain water—immediately stops them; those stacks,

however, built on the ground will suffer if rats are not poisoned and ferreted out at sufficiently frequent intervals.

In dwelling-houses and the like the gin may be employed, if it be covered with chaff amongst which corn has been mixed, and whereon the vermin have regaled after their wariness has been subdued. One disadvantage which the gin has is that its working frightens the uncaught rats, and continual trapping of comrades drives the others away, so that often two or three systematic catchings are necessary before the ever-encroaching vermin are cleared out.

Another trap used a good deal is what is generally termed the box trap; its employment, however, is uncertain as to results, and although it very often proves efficacious enough, the idea in its original form is somewhat poor. The trap is much the same as the ordinary mouse trap, only considerably larger, often being double, *i.e.*, having two separate openings in opposite directions, each side being a complete trap. The system, however, is decidedly faulty, because depending solely upon the bait being seized by the vermin and pulled to set the spring off, it has in this fact a considerable objection, and therefore, if any other sort with fair working capabilities is to be obtained, the box trap may be very conveniently laid aside. As, however, it may be employed on many occasions, it should not be regarded as by any means useless. Before being used, the inside portion of the trap adjacent to the hook upon which the bait hangs must be rubbed with aniseed oil, and whatever the bait be (for preference the head of a red herring), it should be fixed upon the hook, and the trap tied open. All must be served in this manner, and placed about where the rats frequent,

the floor of the gins and just outside being sprinkled with fine sawdust or sand. When the baits are regularly taken by rats, evident from the footprints left in the sawdust, the traps may be untied and set to catch, the hands being disguised so as to leave no smell to alarm the vermin. By the repetition of this mode of procedure for a time or two, a considerable number of rats may be caught, and, being alive, provide good sport for the terriers at hand; if there be no dogs, the traps may be opened with one foot, while a spade smartly dropped on the escaping rats is a most effectual mode of ending their days.

There are many modifications of the box-trap which can be used with much greater success than the article in its usual form, but they vary to so small an extent that there is no occasion to describe them. Anyone using traps a little, and gaining experience, will soon find opportunities for putting into practice such ideas as may be suggested by actual occurrences.

An alleged improvement is the wire rat trap, that is, a sort of cage, measuring 14in. long by 7in. wide and 6in. high, which renders it at all times a very conspicuous object, and one decidedly suspicious; it is, in action, the same as the old trap, a zinc door being pushed down by a wire frame, acted upon by a coiled spring; a hook sustains the bait, which, on being touched pretty hardly, releases or should release the wire attached to the door; it is, however, at best a remarkably poor contrivance, and even with the addition of a complicated trigger, a bad imitation of the High Elms trap, with a flap entrance at one corner. It is not half worth the money it costs, from 3s. 6d. to 4s. 6d.

Another wire cage trap is of much more use than the apparatus mentioned before. It consists of a cage of galvanised iron wire, about 2ft. square and 4in. deep; in the centre of this is a second compartment, about 6in. square, entirely shut off from the rest, and it opens only to the outside. To fit exactly into this is another complete cage, with a small door, and provided with a small handle to lift it out; at each corner of the large cage is a little

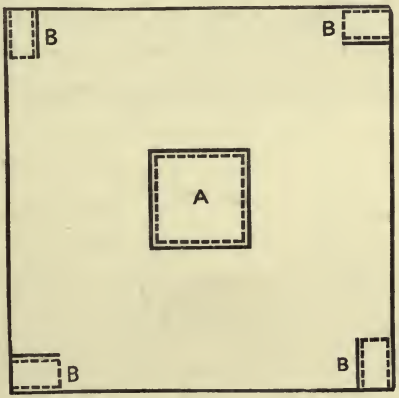


FIG. 28.—PLAN OF RAT-TRAP.

flap door of wire, working in a passage formed by fixing a small wall of wirework adjacent. The annexed sketch shows the affair more clearly. Fig. 28 represents the plan of the trap, A being the inner compartment with the dotted line shewing the cage which is dropped into it; B, B, B, B, are the entrances, working as in Fig. 29. The rats wishing to enter, attracted by a tame brown one, which is in the cage at A, and well provided with food,

work round and round till they come to the openings at B, and pushing in, as shown in Fig. 29, get into the body of the trap, when the flap C falls down again, thus preventing their getting out. One of these traps, at about 8s. 6d., obtainable of Langford, ironmonger, Leadenhall Market, is well worth its price.

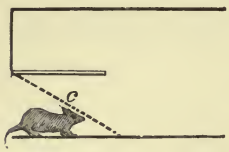


FIG. 29.—MODE OF ENTRY TO CAGE TRAP.

At Fig. 30 we give an illustration of another form of rat-trap, which we consider an improvement on the old form of cage trap, and if a treadle bridge were substituted for the bait on the hook it would be still better.

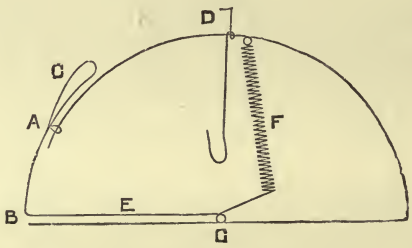


FIG. 30.—FROST'S RAT-TRAP (SECTION).

It is made of galvanised wire, the bottom being oblong, about 15in. to 18in. long by 6in. wide; the top and ends form a semicircle, and the sides are flat. A B (Fig. 30) is the door which slides over the top, leaving the front open, and is held in the ordinary manner with the wire loop, C, by the hook, D. At each bottom corner of the door is a lever, E, twisted round a wire at G, and attached to a coiled spring, F. Immediately the bait is touched the door is

released, and the springs, acting on the levers, close the exit. Fig. 31, where the same lettering is followed, shows

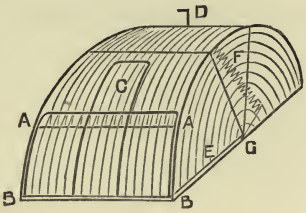


FIG. 31.—FROST'S RAT-TRAP (FRONT VIEW, SHUT).

a front view of the trap when shut. It is sold at Frost's, Pilgrim-street, Newcastle-on-Tyne, and the price is 5s. 6d.

A trap much on the same plan as the common spring box trap we have also known prove itself very successful as a rat catcher. This trap is about 3ft. long, made of plain deal, about 6in. high, and 8in. wide, inside measurement. It is provided at each end with a spring flap door, each held suspended by a catch arrangement, acted on by a treadle in the centre of the floor of the box. When a rat attempts to run through, its weight passing over this releases the catch, and the ends are each closed in an instant. The mode of employing this is similar to that of most traps—the two ends must be fastened up and the trap placed by the side of a wall, adjacent to well-used rat holes. In a very short time the vermin become thoroughly accustomed to it, and run backwards and forwards through the trap without fear; as soon as this desirable result occurs, it can be set and the rats caught in such numbers as luck may determine. We have had four

or five caught at one time in this manner; and if the trap be alternately set and tied up at intervals of two or three days, it can be worked with advantage often for some time. A judicious use of oil of aniseed inside the trap is advisable, and improves the chances of good catches.

Of the "New American Trap" we have already spoken unfavourably, and more especially would we advise the non-adoption of it, in spite of splendid arrays of stuffed rats we see hanging outside shops where these articles are sold, carefully placed in the traps as "caught this morning." In order to give this trap a chance, we tried it under most favourable circumstances, and although several times in succession the bait was removed by rats, we never caught one; and on subsequent experiments we found that the trap will not catch except on one side, and on special conditions by which the taking of the bait by the vermin must be effected. If the rat approach from the side on which is the wire holding the jaws down, it is probable that it will not get caught, it being perfectly possible to take the bait off the trigger and even pull at this latter without springing the trap, while, if this should occur, any fair-sized rat is jerked clear of the trap, while a small one can remain still while the jaws snap together outside it. Besides, owing to the action of the machine, it can only effectually be placed on solid substances, such as board or stone. When set on corn the jaw flies back, giving the animal every chance to get clear; so that, taking all things into consideration, it is not a trap at all.

The "Break Back" rat-trap, to which we have already alluded, is an excellent trap for rats; when properly used it is very efficacious in catching those that have purloined

chickens or the like, by baiting with a piece of meat, &c. Its adoption, too, in barns and similar houses as a trap which may always be kept set, owing to its conspicuousness, can also be advised, and as a general addition to the usual stock of gins it is by no means to be disparaged.

There may be some enquiry why we have included the rat in this work, but there canbe no doubt in any practical mind as to the damages which rats commit amongst game, and we consider that, such being the case, it is well within the province of the game preserver, who should make it his business to keep these varmints down alike in the farm and other buildings as in the preserve itself.

CHAPTER XXXIX.—GROUND VERMIN.

The Hedgehog.

ALTHOUGH the hedgehog be decidedly vermin, it is not generally so held except by gamekeepers, the majority of whom kill it when caught, and compass its destruction whenever evidence of its mischievousness is apparent. It is mostly regarded as living entirely on insects and such reptiles as it can discover in these islands, but it really is as destructive amongst young game as it can well be, considering its comparatively slow movements and the difficulty such a rough-bodied, short-legged animal must have in passing over uneven and overgrown ground.

There is no need to describe the appearance of the hedgehog, for there are few other common objects of the country better known. It has a great variety of names in different parts, and, independent of many local ones, it is also termed "urchin," "furzepig," and "hedgepig," in reference probably to its prickly shield or to its favourite haunts.

The hedgepig is fairly plentiful all over the country,

and while in some parts it is exceedingly common, having but slight notice taken of it, in others, through various causes, it is quite a rarity, and regarded with curiosity and interest when captured, which rarely takes place except in the gamekeeper's traps, when, of course, it is more or less injured.

The hedgehog is essentially nocturnal in its habits, and in its natural state invariably retires from the search for food and other occupations as the sun rises, nor does it again come forth from its hiding as well as sleeping place until the dusk of evening is deepening into night, when it goes in search of prey, which is generally said to consist almost entirely of insects. Its legitimate food should therefore be beetles, and the various other similarly constituted creeping things which are found for the most part above the earth, together with grubs, worms, and those insects which it is able and likes to dig out from beneath the surface, while bees and ants are also asserted to be worthy of mention in this category. The hedgehog is also affirmed, whether rightly or wrongly, to consume a variety of vegetable provender, such as roots, haws, crabs, and other wild fruits. This is, however, but one side of the question; and, whatever may be the causes which induce the hedge-pig to make its meals on animal substances, the fact remains that it is addicted to the capture and eating of many of the furred and feathered *protégés* of the gamekeeper.

There is no sort of game which the hedgehog cannot catch, and, having caught, consume, and moreover, with no inconsiderable avidity. But chiefly is it an enemy to

the rabbit, which it captures continually, and in some numbers. This apparently arduous accomplishment is not by any means so difficult for the hedgehog as we might suppose; for on the even, unresisting surface of pasture fields the prickly animal progresses with ease, silence, and celerity, creeping upon any rabbit which, ignorant of its enemy's presence, is feeding calmly in the field, until with a quick run it seizes the coney, with a vigorous bite kills it, and eats such portion as may seem most delectable. In much the same manner can it capture the hare; but one would fancy that an animal of this kind could scarcely succeed in successfully attacking birds like the pheasant and partridge, very strong on the wing and remarkably wary, yet on many and varied occasions have both of these birds fallen victims to the exquisite stealth of the vermin we discuss, and it is certain that if the pheasant can be caught by it, all the other game birds are no less likely to be taken. But it is among the young and comparatively helpless birds that the hedgehog chiefly exercises its mischievous intent, and when the nesting time comes round it makes many a hearty meal, no doubt, off pheasant and partridge eggs.

Not content with so large a scope for satisfying its hunger, the urchin has even a taste for fish, and will often fall a victim to the traps of the game preserver when he baits them with a piece of one of the succulent fishes which inhabit our streams and rivers. Nor should the poultry house itself be regarded as free from a marauding visit from the hedge-pig, for, maybe, it may deem a change of diet necessary to the maintenance of its

well defended body, and kill a young fowl or devour a nestful of eggs.

The nest of the hedgehog is generally placed in some warm nook at the root of a tree, or in a fissure of a decayed tree itself, care always being observed that the entrance is large and easy of access, so that in the event of a hurried retreat it may quickly enter, coil itself into a ball, and remain defiant except to the hand of man, who, of course, knows by more ways than one how to move it out. Often the retreat is chosen among rocks or large stones, and a warm, dry, sheltered crevice provides the home of this eminently interesting animal, while again it may adopt a rabbit burrow for its nest, whence the rightful owners, no doubt, beat a hasty retreat.

The greater number of hedgehogs hibernate during the inclemency of the winter months, though not all, as occasionally these animals have been observed passing the winter in the same manner as the summer, except always that their comfort cannot be so great, nor their food so plentiful. However, those—and they are by far the greater number—which pass into the peculiar state of hibernation do not provide any food for themselves, and are consequently of great interest for this reason.

As soon as the winter is over, and they again take up their usual routine of life, they make preparations for breeding, and about May the litter is produced. The young of the hedgehog are, without doubt, the queerest little animals one could name, and until they commence to develop their spines they might be regarded as bearing a likeness to nothing one ever saw before. Curiously enough,

the ears as well as the eyes of the brood are closed until from fourteen to twenty days. When about three months old they are completely covered in their prickly armour, but not until six months do they become full grown. The young number from three to five.

In addition to the usual nest, the female constructs another wherein to bring forth and rear the young, and this is a model of comfort and neatness, composed of moss, lichen, and similar materials, and so thatched with leaves, &c., as to be impervious to the sharp showers of rain frequent in spring time.

Having taken notice of the habits of the hedgehog, we must now pass to the consideration of such means as must be employed to compass its capture or destruction when this becomes really necessary. It must be remembered, however, that the hedgehog is undoubtedly a useful animal in very many respects; for, whether destroying the noxious pests which infest the farmer's ground, or, when called to domestication, consuming the black beetles and cock-roaches of our kitchens, it is always cleanly and harmless. It is only because we write in the interest of game preserving that we mention the hedgehog and the means of taking it.

The gin is the only trap that is of service, and, what is more, it is only by chance that the hedgehog becomes caught, and therefore, whenever we notice evidence of these animals frequenting a place, we may put half-a-dozen or so of gins at rabbit holes or other likely places. The hedgehog is peculiarly fond of working round and round certain fields, and on every estate there are sure to be

found one or two pastures particularly frequented by hedgehogs. In order to capture them without hurt, it is advisable to construct a pitfall trap. Besides, these animals can always be sold in London and other towns, and therefore are not to be destroyed if one can possibly dispose of them otherwise. Fig. 32 shows the construction of the pitfall, and as it is easily made and used, its employment is useful for catching a variety of vermin, for it can be

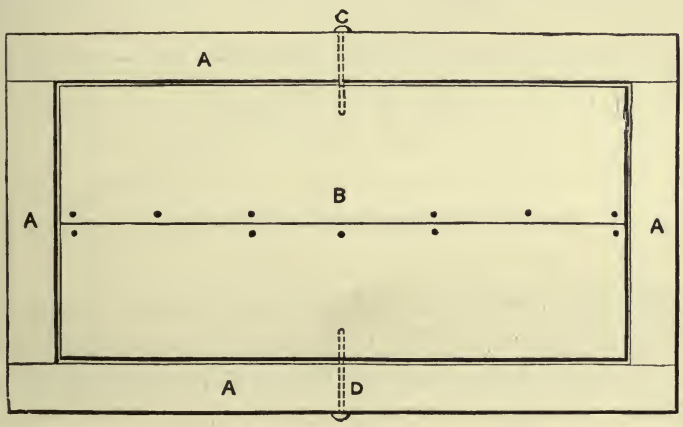


FIG. 32.—PITFALL TRAP FOR HEDGEHOGS, ETC.

placed in the covert or field and left to take its chance. The measurements given are suitable for either hedgehogs, stoats, weasels, or the like, but for cats it must be made larger. A marks the four sides forming the frame, 2in. thick, 3in. wide, and 3½ft. by 2ft. B is the cover, made of two pieces of 1in. deal, strengthened by cross pieces on the under side, and measuring 3ft. by 1½ft. C and D are two pegs upon which the cover easily works up or

down, as in Fig. 33, the dotted line showing the proper position when the cover is at rest. To use this a hole must be formed in the turf, sufficiently deep to contain the frame, after which a square hole slightly larger than B, at the sides, must be dug, about two to three feet deep.

The situation for this should be chosen in a nice open

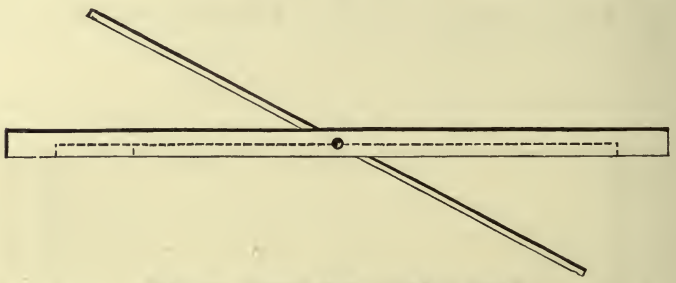


FIG. 33.—COVER FOR PITFALL TRAP.

suitable place, which the hedgepigs are known to frequent, and, being almost certain to find out this wooden cover, they attempt to run over and sniff about it, and, consequently, get caught. We have already mentioned the pitfall in this work, and would advise its employment where there is a chance of good results.

CHAPTER XL.—WINGED VERMIN.

The Raven.

NOTWITHSTANDING the long list of what is generally termed "ground vermin," there is a second nearly as lengthy, comprehending the various birds which, in contra-distinction, we call "winged vermin." The first of these to be noticed is the raven, and we will consider this, the largest member of the Corvidæ, in those respects which are likely to interest the game preserver, without reference to any qualities it may have as a "farmer's friend." Although in closely cultivated districts the raven is not to be seen, it is a well-known bird on rough moorlands, becoming more frequent as the country becomes wilder and less visited by mankind, though the presence of sheep and cattle is to its liking. Accordingly, the bird is growing scarcer every year, as the continued increase of cultivation makes inroads on its natural domain. On the higher portions of all our moorlands, in the mountains of Wales and Ireland, and throughout the greater portion of the Highlands of Scotland, where the weather mostly inclines towards roughness, and is ofttimes wild in the

extreme, the raven still finds localities suitable to its taste, and spots where it can with comfort eke out the days of its varied existence, a menace to all birds smaller than itself, and ready to defy the supremacy even of the eagle, should any venture to intrude upon its fastnesses. The raven is decidedly a large bird, measuring about 2ft. in total length, by some 4in. to 4½in., while the width across the wings, when full grown, is about 3ft. Its flight is remarkably elegant for a bird so ungainly on the ground, and is, moreover, exceedingly powerful, alternating between rapid directness and a short hovering motion, either produced seemingly without the slightest exertion. These birds live for the most part in pairs, the same two mating off in successive years until death or other casualty causes a separation, the pair remaining in company at all times, except, of course, during the nesting season, when a close companionship is impossible; but as soon as the young are large enough to fly, the two old ones join them until the progeny throw off the parental yoke, when they again return to the enjoyment of their former solitary life. The nest or eyrie of the raven is usually formed in the interstices of some rocky crag, offering sufficient space, together with security from human beings, or placed upon the topmost branches of some high tree, beyond the reach of harm. The nest is invariably large, as, besides being from 2ft. to 3ft. wide, it is added to year after year until sometimes quite a monstrosity in nests is the result; sticks, lined with fibre, roots, hair, and wool form the materials. The young ravens are the object of considerable solicitude on the part of their parents, who are ever bent on providing

them with a sufficiency of food; and, besides being voracious, the nestlings often endeavour to fly before they have their feathers. Falling from the nest, and, being unable to return, many a young corbie has to take its chance on the ground till its feathers grow, often being captured, and sometimes losing its life. In addition to the more general name of raven, the bird is known as the Corbie, the Corbie Crow, and the Great Corbie Crow.

The food of the raven is, for the greater part, of an animal nature, and its voracity is seldom equalled among birds, for, in addition to every living thing which comes in its way, it will include fruit, corn, &c., in its list of provender. Nor does it fear to attack animals larger than itself, and there is nothing which can be overcome by its strength or wariness that is not liable to fall a victim to the corbie crow's voracity. Lambs and the more feeble sheep suffer chiefly from attack, while game of all sorts which may be in the neighbourhood are as fish to the raven's net, the eggs of grouse and the birds themselves receiving the chief injury for which the game preserver has to seek the capture and death of this bird.

There are but few opportunities offered for its capture by traps and snares, and we must depend for the most part upon taking the young or eggs, on shooting the birds, or on the employment of poisoned meat in such places as may seem suitable. Upon the first mode but little need be said, but upon shooting we may make a few remarks. The best time to get at ravens is in summer, when the birds may generally at mid-day be seen hovering round the highest part of the moorland which they frequent, and a position

should be chosen in some spot hidden to a great extent, whence aim may be taken with but little exposure. A dead lamb or piece of sheepskin should be provided and placed in full view (on the top of a large stone for preference) in close proximity to the person concealed. If the ravens be about they will soon notice the lure and commence circling round about it, uttering their dismal croak meanwhile. Under such circumstances, a shot at one or both is almost certain. In the open they may often be brought within range by simply lying down on one's back.

When it is desired to poison the raven, a lamb, sheep, or piece of flesh—carrion being quite admissible—may be employed, and a sufficiency of strychnine put about it. The bait must then be transported to some favourite haunt of the ravens, and, if possible, be .placed in a conspicuous situation easily perceived by them, but—and this is indispensable—quite out of the reach of any animal or person; and it is advisable to attach to a poisoned bait of this sort a label making clear the nature of the lure.

This, so far as we are aware, is all that can be said as to the taking of these birds. It was necessary to take some note of the raven as vermin, for undoubtedly in many districts it is a source of great annoyance and loss both to the farmer and game preserver, and whatever may be said as regards the increasing scarcity of the bird, it is certain that for many years to come it will find abundance of country in Great Britain suitable to its tastes and habits, and where its presence may be freely tolerated.

CHAPTER XLI.—WINGED VERMIN.

The Crow.

IN outward appearance the crow is neither more nor less than a miniature raven, while also there is so little by which to distinguish it from the rook that the two are often confounded, the only actual difference besides "look" being the bleached beak and the white skin upon the rook's face. The latter however, is decidedly gregarious, while the crow prefers to remain in small parties of a single pair to five or six. The crow, too, is comparatively strong in number, and must be well able to take care of itself, seeing the persecution it receives both from the game-keeper and the farmer. With some little observation it will be noticed that, although it has a *penchant* for semi-solitary existence, it is much inclined to assemble with others in the morning, to plan, presumably, the course of proceedings for the day, and at evening to discuss them, and further, that these birds have a certain daily routine, more or less closely followed; particularly is this noticeable in their choice of resting place and manner of going to roost. The former is generally chosen after some seeming

deliberation, and when one or two have found the situation safe, the rest drop in gently, one, two, or three at a time. We have often observed with interest a large flock of crows taking up their abode for the night in a plantation or wood; further, when the evenings have been wet, we have made terrible inroads on the "hoody craws" which have "trespassed in pursuit." Indeed, such occasions offer capital opportunity for thinning the ranks of these vermin, and ten or twelve, two and three nights in succession, have often tumbled off the tops of the larch trees in a manner uncomfortable to themselves, but gratifying to the director of the quiet pot shots beneath.

About the month of March the young crows commence to pair off, and as soon as mated the construction of the nest is begun, and is slowly brought to completion by the united efforts of both birds. It is, though large, by no means compact, and is invariably placed at—not on—the fork (not always the main one) of a large tree. Sometimes it is on the topmost boughs of a high swinging Scotch fir; at others, as near the extremity of the middle branch of an overhanging oak as comfort and safety will allow.

The food of the crow—with which we have chiefly to do—is of such varied nature and extends to objects so vastly different, according to locality, that very erroneous opinions are sometimes formed regarding the amount of destruction it will commit among game of all kinds. Regarding the mistaken idea that the crow is alike a "farmer's friend" and not inimical to game preserving, we shall mention the animals, &c., the numerical diminution of which is desirable to the farmer. Foremost among them are mice,

of which the crow certainly destroys a fair number, together with shrews, and, perhaps, an occasional mole or two. Insect life, as far as concerns some of those beetles which either dwell on the ground surface or are strictly fossorial, with many grubs of comparatively harmless nature, go towards satisfying the crow's appetite. The number of insects, however, can scarcely be worth recording, as, together with worms, &c., they form a very small part of this bird's food. The nests of small birds, placed in any position liable to observation, are quite likely to be emptied of their contents by these feathered vermin. To the game preserver, however, the crow in absence is decidedly superior to the crow present, obtaining, as it does, by means as stealthy as successful, his various furred and feathered *protégés*. Rabbits of any size or age are captured, and, being captured, eaten, the favourite ruse seeming to be a quick rise from one side of a hedge, swooping down on the quarry already marked on the other—at least, we have repeatedly observed it so—in addition to many other stealthy ways more worthy of a poaching cat. There is no doubt that in a similar manner to this crows kill young partridges, besides fair-sized leverets, but it is difficult to prove, for, besides having a habit of hiding to some extent the remains of its victims, the action of a crow when consuming a bird is so indistinguishable from its usual mode of behaviour that it would excite no special notice. It is, however, among the young of game that the crow's mischievous habits prove most objectionable, and although the magpie and jay are remarkably obnoxious, the crow runs them very close as a destroyer of eggs. If one of these varmints

discover a nest, whether being in actual search of food or in hurried flight, in either case it drops down with a view to obtain a goodly share of the succulent food, be the eggs never so "strawey," or already containing chicks; perhaps, in the latter case, continuation of its flight being necessary, it abjures the temptation *pro tem.*, to return speedily at the first available opportunity.

Young birds most often fall victims to the crow's rapacity when sufficiently old to leave their parents during the daytime, only going back to their protection at intervals and at night. Under such circumstances crows pick up a good number of young partridges and pheasants, and, perhaps, even more than the magpie or jay, for if this bird have a preference, it is for young game of the age indicated as well as chickens of similar tender years and confiding nature. Chickens and ducklings, when first allowed to roam about the fields, are very liable to be captured, killed, and carried off by the carrion crow; indeed, in some districts extreme vigilance is necessary, while even in localities where the bird is not plentiful and comparatively unhurtful, there are sure to be one or two wary old crows about, which invariably turn up at opportune moments, and, in spite of close vigilance, will manage to snap up probably "the finest one of the lot," returning, perhaps, with cool imperturbability, and successfully carrying off "another beauty." Wherever many young pheasants are reared and allowed out of the coops when small, these sombre thieves will be on the alert, and many, indeed, are the raids they annually commit in this direction. In addition to thus inflicting loss, the crow is a remarkably persevering thief in respect

of the eggs deposited in outlying corners, &c., by perverse-natured hens which will lay astray, and it is no uncommon occurrence for some wily old carrion crow to systematically visit such a nest and daily purloin the freshly laid eggs. These depredations in and around the farmyard are for the most part carried on either in the early morning, or at least before the middle of the day has arrived, with its consequent bustling about, and, although the crow is disposed to snap up any duckling or chicken which may be roaming the fields at some slight distance from the house, its favourite way is to hang about in the morning, and according to circumstances betake itself subsequently to some more distant parts of the place, where it may conveniently have a good time amongst the young and eggs of the game, or disport itself on a tender young coney. We mention these habits of the crow in respect of young poultry more particularly, as, although its mischief amongst game is very considerable, it renders itself as easily taken by traps, &c., in the former case as in the latter. As the season for the above-named food draws to a close, the crow is obliged to make shift in other directions than in the preserves and poultry yard, and although it prefers at all times food of the nature just described, when the carcase of a dead sheep or bullock is in the neighbourhood, the crow is able to some extent to verify its cognomen of "carrion crow." But putrid flesh is by no means so much to its liking as to warrant the appellation given to it. In addition to this name, many other local ones are applied to this bird; the best known are Corbie Crow, Midden Crow, Gor Crow (probably by reason of its usual cry),

Flesh Crow, the Hoody, the Black-Neb (from its beak), and the Black Crow, to distinguish it from the Hooded Crow, one of the Corvidæ which, though not a common visitant in our southern counties, is well enough known in the northern ones and in the sister countries. It does not breed in England, but on the wild sea-coast of North Scotland and the adjacent isles it multiplies greatly. As far as its other habits go, it is similar to the Carrion Crow, excepting only that its voracity for animals and birds, especially of a "game" nature, is greater, and consequently more obnoxious to sportsmen. It is known by a great variety of names, the most common being Royston, Dun, Norway, Grey, Greybacked, and Kentish Crow.

CHAPTER XLII.—WINGED VERMIN.

The Rook.

WE confess to some trepidation in treating the rook as vermin, because we are but too well aware of the never-ending dispute upon its merits and demerits as a common object of the country. The best advice we can offer to the game preserver or the farmer is, to follow the path which his own experience points out, and to leave hearsay to others. This bird and the crow are more frequently confounded than any other of the feathered denizens of these isles, and naturally, for to the unaccustomed eye there is literally no difference in colour, size, nor habit, between the two, while in most counties the names are employed to designate both indiscriminately. To the practised eye, however, the "look"—we know no more expressive word—of the two birds is obvious, while on close scrutiny the difference is marked.

The rook is essentially gregarious, and prefers to pass its time with as many more of its species as may be compatible with harmony. It lacks a good deal of the daring noticeable in the crow and other congeners, but

is very slightly wanting in cunning and wariness. Its nesting habits are too well known to need description, but we may note that rooks do not confine themselves to the limits of a rookery when choosing the site for their nest, which is large, very often clumsy, and resembles in a great degree that of the crow, but is scarcely so big. Outside a rookery the same characteristics determine the site as with the crow. The rook is of a particularly active nature, and is both an early riser and late in going to roost. Its daily existence we need not describe, because it is sufficiently well known, but will devote attention to the somewhat delicate question, What constitutes its food? This may be said to consist in the main of corn, insects, grubs, berries, fruits, vegetables, rabbits, game and eggs. The question between the game preserving interest and the farming interest is, whether the bird be as destructive of noxious insect life in supplying itself with food as to warrant overlooking its misdeeds as regards the crops and against game in its various forms, and we devote a little attention to the matter from both points of view.

Corn, it is quite evident, is, during the earlier portion of the year, to be obtained by the bird in plenty, while at other times it is out of reach. No one can deny that rooks consume an immense amount of spring-sown corn, whether when first spread over the ground, when harrowed, rolled in, or when in the blade, up to such time as the original grain disappears. The parts of these islands we have lived in are not by any means of exceptional character, and we have many times seen, with regret, flights innumerably large, busily engaged in corn fields in

any of the stages of culture just mentioned. When the corn is sown, what is it if it be not this which brings the birds to the fields and engages their most earnest attention day after day, and all day long? Grubs, worms, or insects it cannot be. The rooks are there in search of food, and that food is the freshly scattered corn. It is asserted by the advocates of the rook, that, once the grain has sprouted, be it wheat, barley, or oats, the birds are not in quest of the corn, but of wire worms and other noxious pests of the soil, which are instinctively attracted to the juicy roots of the grain ; and that, although the rooks are compelled in the search to uproot the now growing corn, still it will be noticed that the blades they turn out are withered, and that also they would not have thriven owing to the grubs' presence. We have had ample experience of the incorrectness of this assertion. Does it not strike one as peculiarly noticeable that a blade of just-uprooted corn should appear withered? Further, is it not remarkable that this abundance of wire worms is towards the centre of the field, and that if one scare the rooks by such means as are at one's disposal, these have an equally depressing effect on the ordinarily unimpressive wire worms, grubs, &c.?

Potatoes also form very acceptable food for rooks, and, as far as we can see, are held in great esteem by them. The defenders of the rook, however, are at variance with those who denounce it in regard to potatoes, asserting that these indispensable tubers are attacked by many insect foes, and it is to get at these and consume them that the vermin unearth the sets. While allowing that bits of

potatoes have been found in the rook's crop, they deny that they were consumed intentionally, but suggest that they were eaten accidentally, along with the insects lurking within these portions of tuber. Admitting the existence of these minute enemies, as well as the destruction they cause, it seems scarcely worth while to allow a flight of perhaps two or three hundred enterprising rooks to unearth a whole field of potatoes, perhaps nearly ripe, for the sake of ousting from their tuberous shelter, or consuming a number, comparatively speaking very small, of insects or grubs whose hurtfulness to the crops is very dubious; and as to the pieces of potatoes found in the rook's crop, the same doubt is justified as to their presence being exceptional, while everything points to its being the rule. Rooks do eat potatoes, and for the reason, good enough as far as it goes, that there are insects or grubs inside them, but also for another reason, and far more cogent to the birds, because they like them, if they be destitute of grubs so much the better; and, like a good many other animals, the more one allows them to eat the more they will; give them a yard, and they will clear an acre. We remark the same arguments with regard to turnips when rooks eat them; we repeat our countercharge and adhere to what we know to be facts sooner than pin our faith to theories which are both unsound and unjustified.

We now come to the consideration of the insects which the rook destroys and captures for its food; and as the cockchafer larva is said to be the most destructive grub which can inflict its unwelcome presence on grass land, the credit of destroying these is always accorded to the

rook, wholly and without exception. A popular naturalist says: The rook saves acres of grass from being destroyed by the grub of the common cockchafer beetle. The grub or larva of this insect is one of the most destructive foes to grass lands, feeding upon the roots and shearing them nearly level with the surface of the ground by means of its scissor-like jaws. So destructive are these insects, and so complete are their ravages, that a person has been able to take in his hand the turf under which they had been living, and to roll it up as if it had been cut with a spade. He goes on to say that, when it is remembered that this creature has attributes remarkably adapted for destroying grass, the services of the rook may be better imagined. We agree with him that the rook is useful and beneficial to the agriculturist in this matter, and although we would point out that the jackdaw is even more arduous in its search for these grubs than the rook, still we do not gainsay the latter bird's utility.

Many fruits are very attractive to the bird, and its presence in gardens and orchards, for the purpose of thieving the carefully grown dainties, is often a source of annoyance which, would it confine its attention to berries and wild fruits, would not be created. Oak apples suit the rook, and not content with plucking and eating this fruit, it has a curious habit of burying them with a view to a "rainy day," while the cones of Scotch firs are similarly stored as additional provision.

After a careful enumeration of the food which the rook obtains from without the province of the game preserver, we have now come to a point where we are obliged to

make known the destructive tendency of multifarious rooks in and about game coverts and preserves. Our aim is to instruct, if we may so hope, the amateur game preserver, and we have offered this lengthy description with a view to laying before our readers the facts relating to the habits of the rook, and, inasmuch as great diversity of opinion exists as to whether this bird is vermin or not, we leave those interested to form their opinion. No one can say the rook never touches game. Those who say so will probably be compelled to allow that they mean "not often," which conceded, we then, disputing the "benefits received," assert that, far from having an occasional fancy, the rook has a decided *penchant* for young rabbits and game birds; not quite so decided, perhaps, as the crow, but sufficient to keep it active in search of such young birds and ground game as may be obtainable. Far from being rare, it is our opinion, based on observation, that it is a very common—almost everyday—occurrence for rabbits and partridges, where they exist, to fall victims to the rapacity of the frugivorous crow. We have seen this so often that we can scarcely credit statements, made by those who ought to know, concerning the utter harmlessness of the rook in respect of game.

The rook is very mischievous during nesting time to partridges and pheasants, and these game birds must add its name to the list of birds and animals at all times eager, when the chance offers, to despoil their nests and feast upon the eggs. Not that the rook is a determined searcher after these, although this exceptional conduct sometimes occurs; but it takes them only when, whilst in search of other and

more substantial provender, it accidentally comes across a nestful. It is not very likely that it drives off a hen-bird when sitting, nor will it attack one luckily at hand to dispute with it.

Whether poultry are much interfered with depends on various circumstances; and although our ducklings and chickens may flatter themselves on their immunity from persecution by this class of winged vermin, a daringly thievish rook will occasionally render itself as dangerous and clever a despoiler of the young poultry as its congener, the crow; while perverse hens which persist in laying astray may as safely impute the destruction of their hidden hoard to the rook as to any other feathered marauder.

CHAPTER XLIII.—WINGED VERMIN.

Taking Crows and Rooks.

FOR crows and rooks the usual sized rabbit gins are perhaps the best to employ. They should be those with the softest springs—soft not in the ease with which they break, but in their action when springing up—so that they rise easily, and close the jaws as gently as is compatible with the necessary quickness. With regard to the jaws, opinions differ as to whether it is advisable to bind them over with string, so as to lessen the cutting power; but we prefer the gins without any binding, being careful only to choose those with springs of the kind mentioned, and having the teeth rounded in the now usual pattern, instead of a plain zigzag. Some prefer to use traps with no teeth at all, the jaws being in the old-fashioned style, but having a plain edge. The same may be said of them, however, as of those with the small sharp teeth—namely, that they are likely to cut off the foot of the bird caught, and thus allow it to escape, but minus one or both of its members. The latter occurrence would be exceedingly cruel, for it is obvious that a rook or crow, in that case, must eventually

die of starvation, if it do not bleed to death. On these facts being considered it seems most advisable, if gins must be used, that the usual type be employed.

The best traps to obtain for this purpose are 3in. Dorset vermin gins; they are about two-thirds the size of the ordinary rabbit gin, made strongly, but not intended to sustain so much rough usage as the others. The best we know of are those manufactured by Lane, both as far as concerns material and workmanship. These gins are about 10in. long and 3in. wide over the jaws, the bow-spring being only 1½in. high and 1in. wide. From the measurements it will be noticed that the trap is easy to cover, and at the same time sufficiently large to be thoroughly efficacious. The spring is well tempered, quick, but not too much so, for the jaws, which, being well shaped, carefully made, and neatly fitted, produce less effect than would ill-fitted ones, there being sufficient space between the teeth. The plate and catch work uncommonly well, and can be set so that the slightest pressure will effectually discharge the gin. The chains in these, as in all Lane's traps, are of the best manufacture, and well put on. This firm also makes a smaller one at a cheaper price, which may be used with almost equal effect, the difference between the two being rather in finish than construction. Shave, of Birmingham, supplies also a very excellent 13in. trap, at a moderate price, there being but little to choose between the two. We have also seen some highly-finished well-made vermin traps, bearing the name of "F. Lane, Plymouth," being nothing more nor less than small sizes of his really first-rate rabbit gins, some of which we have had in use for nearly five

years; their appearance warrants us in saying that they will serve well for another equal space of time. These 3in. have zinc plates, carefully cut brass catches of very superior workmanship, and well-fitted jaws and springs of good, even temper. They are, however, rather too good for winged vermin, being better adapted for the taking of stoats or polecats.

The stakes for the gins we advocate may be made in the manner already described. It may be as well to remark that the stakes must not be made, in size, comparative with that of the gin; but that, although not quite so large as would be necessary for a full-sized trap, they must be sufficiently long and stout to secure the apparatus firmly to the ground; especially is this necessary, as very often the setting has to be made on loose, lately ploughed land, which offers at best but an unreliable hold.

Shave not long since brought out a chainless trap, which is secured by an iron stake fitted into the back piece, and although we doubt its efficacy for holding rabbits (and for this it is chiefly intended), we are quite convinced as to its suitability for winged vermin, except only under the conditions just mentioned above. For the ordinary catching of feathered vermin it is certainly a saving of trouble in the matter of chains and stakes, wherever the means by which it is held secure obtain a safe hold; the dispensing with a chain, to enable the spring to be fixed beneath, instead of on the top of the base of the trap, thus doing away with from half to three-quarters of an inch of covering. Midway along the back piece is fixed a swivel having a nut-shaped head, and beneath an eye into which the iron spike

forming the stake is hung; thus any lateral pulling by a rabbit, or the like, simply moves the trap round on what is its axis. In loose soils we fear the iron spike would not hold, but in one of a heavy nature its immovability may be relied on. The remainder of the trap, as will be seen from Fig. 34, is identical with the ordinary sort.

Still one more novelty—viz., Messrs. Douglass Brothers' (of Blaydon-on-Tyne) "New Mitigated Rabbit Trap." In this gin the peculiar feature is the style of the jaws, which are flat and rasped on their side, rendering any chance of

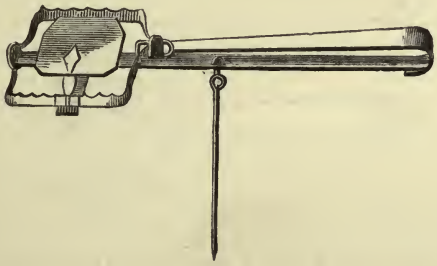


FIG. 34.—SHAVE'S CHAINLESS TRAP.

cutting out of the question—a very material advantage when the capturing of feathered vermin is considered. It is, of course, intended primarily as a rabbit trap, the innovation being intended to render the gin more humane; hence its title of Mitigated; but certainly for the purpose we mention its use should be attended with satisfactory results. The jaws are about ½in. wide, and ⅛in. thick, being rounded on the inside and rasped at intervals of ¼in. one way, and ⅛in. the other. They do not spring quite close up, and retain sufficient hold of either a crow's or rook's leg to

detain the bird without breaking any bones. The traps are well made as rabbit traps, such being the size we have, and being low, are easy to cover. We should certainly like to see some vermin size, say 3in. in the jaw, brought out, as for winged vermin they would prove very useful. We append a sketch of one of them (see Fig. 35.)

The remarks we have made concerning the jaws of traps being too likely to cut, hold good, of course, only when no bait is used, or, rather, only when the capture of the vermin by their legs is intended, for in the event of some

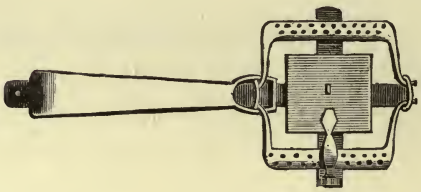


FIG. 35.—DOUGLASS BROS.' MITIGATED TRAP.

lure being placed on the plate of the gin, or in such position as to cause the rook or crow, whichever it may be, to draw it by means of its pecking on the treadle, the jaws, of course, springing up, encompass the neck or head of the bird caught and kill it, if not instantaneously, at least very nearly so.

As far as crows are concerned (and with these we shall deal first), we prefer always to employ a bait of some kind; indeed, it is really necessary, for a more unsatisfactory way of going to work than setting a gin on the chance that a crow will walk into it, we hardly know.

Among the usual lures, there is none which may be set down as specially suited to the bird just mentioned, as it is certain that they are almost equally suited to the various other feathered depredators; as far as the haunts go, however, one may, after careful notice, be able to determine the particular places most likely to be associated with the capture of a crow. The most efficacious baits for these vermin are eggs (or rather egg-shells), rabbits, a dead duckling, chicken, portions of a sheep's or lamb's carcase—for preference the head—and any high-smelling offal at all resembling the popular idea of carrion. Egg-shells, rather than eggs, should be employed for baiting traps for the present purpose, because, besides being equally efficacious as the entire article, there is no advantage in wasting good things on a thievishly-natured bird. The shells may be used either in their simple state, or may be filled to make them last longer; this may be either with plaster of Paris, or in the mode we described before, namely, with soft clay, and this being effected, a pointed stick should be stuck into each, leaving about two inches outside, by means of which to fix the bait in the ground. When using rabbits, it is advisable to divide them up into two or three portions, the best and most enticing baits being made by (first having removed the animal's paunch) cutting or probably chopping the rabbit across the side into two pieces, then cut off the underneath skin, finally, partially split the carcase in two by cutting between the legs and bending them apart. This arrangement produces two pieces, showing plenty of red flesh, of a delightfully enticing nature as far as crows are concerned. The mode in

which the other lures are employed calls for no special remark.

When setting traps for winged vermin, it is necessary to observe that care and neatness are no less requisite in connection with such operations than they were in the case of ground vermin, and although we are quite aware that any covering is considered sufficient to deceive either of the birds under discussion, still the idea is erroneous, as we have had ample experience that unless the same amount of attention is given to the tilling for winged as for other varmints, they will easily steer clear of any uncommon appearance of a suspicious kind. The setting should be made in every way identical with that recommended as most easily effected, and most efficacious for stoats or weasels, it being best to set in the ordinary manner with the chain extended to its full length, and not curled up under the spring. To set the chainless trap, an important matter is to be careful to choose a place where the spike holds not only well but is considered perfectly reliable. If the soil be clayey, then the stake may be pushed in by firm and steady pressure; but in soils containing small stones, or of a nature to prevent the trap being fastened down securely in this way, it becomes necessary to hammer it; then, in order that the spring may not unduly suffer, it is necessary to secure a small suitably sized piece of wood which can be placed between the head of the stake and the spring, fitting so closely that the striking acts directly on to this, and thus prevents any damage to the most easily spoiled portion of a gin. Before placing the trap in position, the site for its reception

must be hollowed out, it being advisable to make the part which will contain the spring accessible when the gin comes to be fixed down, which has to be done before the actual setting takes place. In covering this gin, as well as the Mitigated trap, one must be careful to avoid all small stones, for reasons before mentioned; more especially is this necessary with the latter, the tilling of which is identical with the ordinary style of gin.

When eggs are employed as the lure, traps may be set in all places at all likely to be visited by crows, or to be spots where eggs might occur. Thus, all along the open banks of streams, in a conspicuous place amongst rushes bordering any brook or ditch of running water, are very suitable spots, care being taken to choose one well open to scrutiny by any passing crow, and where the bait would be a sufficiently prominent object. Ducks, when they lay astray, very often form a nest in the midst of a clump of rushes, where by continually entering and leaving a gap is produced on one side; and in order to simulate such an instance, a little manœuvring soon renders any handy bunch of the rushes which may border a water-course sufficiently like reality to be of service. One thing must be observed, namely, that the entrance be well defined. In this set the trap, the spring inside the make-believe nest, and the jaws covering the way in or out. The gin having been carefully covered, the portion over the spring may be formed to slightly resemble the often slovenly nest of a duck, and one, two, or three egg-shells may be placed in proper position. If one consider there be any chance of the crow getting at the bait from

the wrong direction, then one or more traps, according to circumstances, may be disposed convenient for the bird's discomfiture should it unwittingly seek it.

Another mode of employing eggs to considerable advantage requires a little more care when arranging the materials, but it is, however, very efficacious. It consists in placing traps on the edges of small ponds, or at the sides of streams where the bank shelves easily down to the water. In this case, the stick inserted in the egg-shell varies according to circumstances, and, in order to make the lure as natural as possible, it is better, instead of using any shells, to abstract the contents of half-a-dozen eggs by making a hole in one side; this done, fill them with clay or mud of suitable softness, and having washed them clean they are ready for use. Then proceed to a conspicuous open place at the side of the water, and fix up the egg so that it seems to float about nine inches from the edge; this done, fix up a second piece of wood having a small Y fork at the top, about three inches inward from the egg, upon which the trap must be supported; this completed to satisfaction, the stake of the gin must be driven in as near the water as it will hold, and, the trap having been tilled, it should be placed beneath the plate on the forked stick. A thin piece of mossy turf may now be obtained from somewhere near at hand, sufficient in size to cover the chain and gin as far as the jaws, which must be neatly concealed with grass and moss pulled small. Most persons, when using this form of tilling, substitute for the ordinary length of chain a small linked one, about two to three feet long, so that when the

crow is caught it flutters into deep water and quickly drowns. The way the vermin gets taken is obvious enough; observing the egg, apparently floating close to the water's edge, whilst endeavouring to reach it by approaching little by little along the artificial pier, as it were, it ends by putting its foot or feet upon the gin and springing it.

Small eggs, such as bantams', may be used to take crows, by placing them, one at a time, on the plate of a gin set near or beneath the trees where the crows mostly resort at midday, a conspicuous spot being chosen where the egg might have fallen out from a nest situate among the branches above. Also, in roads through plantations, or along drives made for shooting, this may be tried, for very often a couple of crows will make a point of resorting thither, and we have often taken crows in such places. Another likely method of employing eggs, as also any other bait, is similar to that which we recommended for weasels and stoats, and consists in cutting a large clod of turf about two feet or more long and eighteen inches wide, and having laid it end on into a pond or stream, setting a trap, or two if considered advisable, about halfway along it, and placing the bait—eggs or otherwise—at the extremity.

So far we have been aiming at the capture of the crow by his legs, and as this will invariably be the case when a catch is obtained, it is necessary to pay some attention to the traps; otherwise, in spite of one's precautions to the contrary, in softly working gins and those of improved pattern, often the vermin will struggle, if caught only by one leg, till it breaks aways, and being more wary for

the future, is but in small degree incapacitated from continuing its depredations. To enumerate all the spots suitably circumstanced for trapping crows would be an unprofitable task, as the whole extent of any preserve may furnish, every few yards, the best of likely places, and although one could set with advantage at every spot which appeared, we should not recommend such indiscriminate mode of going to work. Catching crows in fields, or rather attempting such a thing, would probably result in the capture of other birds, such as wood-pigeons, rooks, or magpies; hence a description of the way of going to work for the discomfiture of one sort holds good to some extent for the others.

At seed time crows are addicted to visiting freshly sown corn fields—and so, indeed, are rooks—and "blowing themselves out" with the swelling grain. In order to put a stop to this, some few should be caught and made examples of. It will be observed that crows and rooks, when bent on devouring corn, always resort to one spot towards the centre of the field; that is, they pitch at this spot and, as they feed, move away from it to others. This is the rule, although occasionally, when the birds are continually disturbed but not harassed, they do not closely observe it, and, if one take trouble to notice, the particular situation for alighting will be easy of recognition when one goes into the field in search of it. On near approach, even if the corn be but lately sown, the extent of the damage will be apparent enough, but after the grain has sprouted and is an inch or two high, it will be much more striking. In order, then, to be even with the crows, a goodly number

of gins—say a dozen—must be set about; the placing should be as indiscriminate as possible and all equidistant one from another; they should be rabbit size, provided with stakes; they must be let in and covered in the usual way, the setting being "tickle" but not too much so, and as the covering of each one is finished, a few grains, but not too many, should be placed on the plate, in order to induce the vermin to peck upon this and get caught by the head. We have occasionally seen more than one "'lighting" spot chosen by the birds, especially when the aggressors were both rooks and crows. Under such circumstances, both clearings must be provided as efficiently as possible. If the scene be a ploughed field, and unsown, choose a prominent part and commence by smoothing over a small area, about four to six feet square. This effected, obtain some bait—a piece of rabbit, a dead duckling, &c.—the better if a little "high;" if not, use some rabbit paunch in addition, to produce the necessary aroma, strong and tempting. The bait should be pegged down, and an irregular cordon of neatly "sot" gins be put in happily-chosen position round. Another good—indeed, we might well say unequalled—mode of capture is a sheep's head, laid on its side, with the usual adornment of traps. There is no need to peg it down—half-a-dozen crows could not fly away with it. A dead lamb is another excellent lure, only wait till the lamb is decidedly high, otherwise a sheep-dog may find it not unacceptable to its by no means fastidious appetite, and, whilst satisfying its hunger, get caught in the gins.

The catching of crows in pasture fields and the like is rather uncertain, as far as results go, for it is obviously

much a matter of chance as to which portion the vermin may mostly frequent, and, frequenting, fall victims to one's gins. However, to a certain extent, as in the former case of the corn-fields, the crows, it will be noticed if they be closely observed, have a portion of the pasture held in more favour than the rest. In this the usual sort of baits may be employed, with traps of the sort considered necessary tilled in numbers to suit the occasion. Either a rabbit, sheep's head, lamb, or the like, will prove enticing; in either case the traps must be set in zig-zag form around, or else be neatly placed in position where they are certain to be efficacious. We have also very often, with considerable success, used as bait another kind of varmint, namely, hedgehogs which have been caught. To employ them to best advantage, they should be well cut open and pegged down, spread out to their full extent, and the traps neatly placed round them. Eggs, as well, are equally applicable, and, in brief, the whole category of baits and lures. The presence of trees, whether a few in a clump, or in numbers enough to deserve the name of plantation, or, again, a fair and square wood or covert, always influences the crows to some extent in their choice of feeding ground; for what reason is not quite apparent, but probably on account of the supposed or actual security which the trees offer. Rarely do we find these birds, except out on unfrequented moors, at any material distance from the shelter they appear to relish; hence, more execution may generally be done, if not entirely in the coverts or woods themselves, at least in close proximity thereto. The situations chosen must, of course, be prominent and easy of notice by the winged vermin,

whether they be at rest on the trees or passing over in flight. There are very often small clumps of trees of one sort or another situate in or near the centre of permanent pasture fields; such are most fruitful situations close to which to set some gins, which, if the ground beneath be easily observable from the tops of the trees, may be placed about a dead rabbit, pegged down near the roots; but if, on the other hand, the foliage be thick, the best position is in the most conspicuous spot some ten or a dozen yards from the outside limit to which the branches extend.

Wherever there be a gate, or even an apology for one, consisting of a gapway jammed full of a combination of what are mostly called brambles, the near neighbourhood of the same where it opens, or should open, on the field, is always a good place, and one that may well be taken advantage of, more especially if the furze-pig be the bait employed; while a nest of eggs neatly arranged on the top of an adjacent portion of the hedgerow, devoid of bushes, is equally likely to bring the crows into the gins set about for them. Within a plantation the spots chosen must be of the same open nature, and if there be any position where the trees, for some reason, have refused to grow, and are of but a few feet high, many a spot may be selected and provided in the way we advocate; for if there be a place a crow has a weakness for, such as we mention is the one, and any gins put there with a dead rabbit as bait are by no means uncertain of effecting a catch. The drives for sporting purposes are much visited by crows, and wherever a conspicuous part exists, the birds, when passing or circling over in search of food, are sure to give it a

large portion of their scrutiny, and if our advice as to tilling a trap or two be followed, a fair portion of their presence too. The most favourable situation in which to set the gin is a tuft of long grass, such as is very often found growing in plantations, and termed, for the most part, couch or sedge grass. If a good-sized clump of this can be secured as site in a suitable spot, it should be parted up forwards, leaving a space in the form of an angle in which to till the trap, which must be placed crossways to and have the jaws covering the space made — the flap of the gin, if possible, on the inner side. The setting, of course, is as usual. It is, however, preferable to use some of the couch cut fine to effect the hiding of the plate and jaws, both for making it look less conspicuous, and because it keeps green far longer than would either common herbage or a small square of turf. The bait—a rabbit or something similar—should be placed a few inches past the trap, which brings it probably to the extremity of the opening made. Along any watercourses through plantations many first-rate places may be found and duly taken advantage of, while any opportunities which may occur of partly eaten rabbits, &c., evidencing a crow as the mischief-maker, should be equally useful in aiding the capture of the marauder, as very often the carrion corbie returns subsequently to the repast temporarily adjourned. When crows attack young poultry it is a very difficult matter to put traps in positions likely to effect the capture of the vermin which, at the same time will not catch, and so consequently injure, the ducklings or chickens themselves; hence, it is better to depend, for the most part, on one's gun to put a check

upon their marauding. At such time of year, however, when it is daylight at an early hour, the crows, we may take it, rising with the sun, come hovering round long before the youngsters are let out. Under these circumstances, therefore, it is quite possible to set some gins, baiting them with egg-shells or any chickens or ducklings which may have lately died, in suitable and conspicuous places where they are sure to receive attention from the crows. Such spots may, for egg-shells, be upon any low bank devoid of thick growth, or at the foot of a hedge or wall where a few nettles, or anything which may be considered likely to partly conceal a nest laid away, may be growing. When traps are set under the conditions named, it might not be unadvisable to keep the young poultry in a little later than usual, so as to give the crows all the chance one can. Speaking of egg-shells reminds us of a way in which they may be used pretty successfully to entice the birds we discuss. The crow is essentially curious, and anything into which it can conveniently and safely pry will receive close investigation. If there be a well open hedge-bank, or, rather, earth-bank, one must dig into it about two or three feet from the ground, so as to form a hollow about eighteen inches deep and of similar width, the earth cleared out, sloping upwards to it, in much the same form a largely-worked rabbit hole would have. In this place two or three egg-shells must be put as far back as is compatible with their remaining well exposed to any passing crow. Two or three inches in advance neatly set and cover one or two traps — if the latter, facing each other — and you are bound to have every carrion corbie

which may perceive the eggs, and accordingly comes to investigate their qualities. Small pieces of white paper fastened down are sometimes just as efficacious as the actual thing.

There is also a good deal to be effected by shooting crows; in fact, sometimes, if one have opportunity and take trouble, the same time devoted to following up the winged marauders as to setting traps will bring better results, more especially in the breeding season, when the young get out upon the branches round their nests before being able to take actual flight. "High Elms," the great authority on matters of the kind, gave, in a letter to the *Field*, the following instructions, which, when observed, give one as good a chance as possible to kill, and require no addition, although written a good many years ago: "If in the breeding season you find a crow's nest (most frequently in a large Scotch fir), wait till she sits deep, and then put her off by accident. If, however, you are a good shot, knock her over at once, but don't fire if you cannot trust yourself, as, if missed, she will forsake. Assuming you have not shot at her, you must get up to the nest and pull out the undermost sticks, all but one or two, but being careful not to disturb the lining. Then stick a bit of white paper, the size of half-a-crown, in the middle of the space pulled away. Watch her on to the nest again (if it rain, all the better, as she will not be so 'tickle'), and send a charge of good strong shot at the paper, and you are sure to kill the carrion crow dead." More practical advice than this as to how to shoot a crow at nesting we cannot point out; and, although not everyone will care or is able

to reach to nests to pull the sticks, most crows are not so remarkably wary as to place their nest in an inaccessible place. "High Elms," in the same communication, thus instructs as to how crows may best be shot when in any position which exemplifies being "out in the open": "If you have got opposite in the adjacent field to where the crow is feeding in the next field, and you have made sure exactly of his being in reach, raise yourself off your knee, and then, in a *stooping position*, put the gun to your shoulder tight, rise suddenly up, and swing the gun up over the wall in the same movement with your shoulder. This may be done so quick, that I have many times killed a magpie on the ground." Previously to doing this your left side is to the wall, and the gun parallel to it. The common plan is for the person to take a step or two back, thrust the gun-barrel over the wall, and get it up when his head and shoulders are raised high enough. Any quick bird will see you, and get twenty or thirty yards before you can shoot him. All this is well worth noticing, especially the latter, for no doubt many persons have wondered at their inability to take advantage of opportunities offered by crows and other winged vermin when feeding well within gun-shot of a hedge.

As before mentioned, on wet, misty evenings crows often congregate together in a wood or plantation, choosing more sheltered roosting places than their ordinary ones. Under these circumstances a couple of guns, one on one side the covert and the second on the other, can easily pick off a good number, the weather and lateness of the hour combined causing the unlucky birds to confine themselves

more closely to the trees than considerations for their safety would suggest.

We do not think there is any further information that we can with advantage give as to how crows and rooks may be taken. A great deal, of course, depends upon the assiduity with which the preserver observes the movements of the birds frequenting his coverts, and, as far as possible, guidance has been given for the purpose.

CHAPTER XLIV.—WINGED VERMIN.

The Magpie—The Jay.

IT would be difficult to name a more indiscriminately mischievous and impudently daring bird than the magpie. Owing to inability to observe its habits, one may have doubts as to the extremely marauding nature of the crow, or may feel morally certain as to the benefits conferred by the rook, but the magpie does not allow one to remain uncertain, and, taken altogether, there is probably no bird the extent of whose depredations is so widespread. Wary to a degree, it seems more difficult to catch or destroy than many other noxious birds, while it appears to offer far more opportunities by which its capture may be effected. Magpies seem to be always keeping a watch on the movements of the game preserver, rather than he on theirs, and often, when the keeper is busily employed in preparing to reduce one class of vermin, a brace of magpies may be scrutinising his movements, and, immediately he proceeds to a further place, approach and carefully inspect the scene of his recent operations. Hence, therefore, the necessity of

always keeping one eye open for magpies when devoting the other elsewhere.

The magpie is not gregariously inclined, but is of a semi-solitary nature, sometimes finding most pleasure in the company of two or three others of its kind, at other times passing its life singly during the day, returning only to the company of its mate at evening, and often separating from her again at dawn. As to the various omens to be drawn from the presence of magpies in pairs, &c., we shall not stop to inquire, merely remarking that the more magpies the more mischief. In spring they are less predacious than later, seeking for the most part what may be termed their legitimate food, consisting partly of insects of all kinds, seeds, berries, corn, beetles, snails, grubs, worms, and other such delicate provender. Their staple food, however, is of a far different kind, the nature of which the game preserver knows only too well.

The nest of the magpie, although of rugged exterior, is by no means roughly constructed, a new one being invariably made each year, close to the last one if it be the same birds', but rarely in the same tree, and never in the same situation. The site chosen is where several branches form a fork with the trunk, and although the height from the ground is variable, the birds always choose a tree which, at about four-fifths of its length, offers a suitable place; hence often nests will be found far up amongst the branches of tall fir trees, where foliage is dense and spreading, mostly in situations somewhat conspicuous, or in comparative proximity to buildings; while, under opposite circumstances, where the covert is

remote and closely wooded, one may discover a nest some nine or ten feet from the ground, and seemingly open to all publicity. In every instance, however, it is carefully constructed of small sticks, and lined with fibre and roots, having always an entire dome of the first-mentioned materials, or something like it. More often than not the dome is complete, and a small round entrance the only opening to the nest.

To enumerate the places which these feathered thieves frequent is impossible—they are so undiscriminating in their choice of locality—but we may rest assured that where game exists magpies will come, if not already there, and speedily proceed to oust the former in their customary unceremonious manner by the many means they know. From the nature of their food, magpies sometimes in winter find themselves very pressed, and in order to discover means of sustenance visit the farm or poultry yard, where they are easily taken; but during the remainder of the year both the game preserver and the poultry keeper suffer from their predatory habits. The pyet, pianet, madge, mag, and such other rustic appellations as it has, is more destructive probably to pheasants', partridges', and grouse eggs than any other feathered varmint, except perhaps the jay; while, were it not for the crow, it might be credited with the larger portion of hens' eggs abstracted and demolished by winged marauders. Pheasants, whenever they leave their nests, may do so with two or three magpies waiting to pounce on the exposed eggs, or when leading their little youngsters out in the great world for the first time, a pair of the pied

villains may be following, ready and eager to snap up any straggler, or even dash at the brood. In the same manner are partridges captured by magpies, sometimes, when but slack vigilance is observed toward the vermin. More especially do broods suffer which are hatched out in, and consequently frequent, such rough spinneys as delight, no doubt, the hearts of upland partridges. Those about the cornfields have more security from attack by these vermin. Grouse, on the other hand, suffer less from magpies than from crows, although, wherever a plantation or wood adjoins the grouse moor, or this latter offers means for the easy escape of magpies if harassed, the birds will suffer to some extent. In the open they are safe, more especially when the young grow up, prior to which state, with partridges, is a peculiarly favourable one for magpies. There is probably also nothing more pleasing to these rascally birds than to pick the bones of a tender and succulent leveret, at the capturing of which the piet seems to be particularly adept. It has, further, an "illigant taste" for a bunny of tender years and similar appetising qualities; and has, moreover, an uncomfortably sharp way of catching them, while occasionally one or more magpies will combine in the taking of a full-grown rabbit, and subsequently enjoy a repast in company. The number of young conies not having reached a half-grown state which magpies kill must be very large, for it rarely happens that they finish off one before they are again in search of further means whereby to satisfy their cravings for mischief rather than for food.

To the poultry keeper in rural districts the magpie is

an incalculable nuisance, stealing his eggs and capturing his chickens with the same wary daring. Hens laying astray have their nests devastated, while those leading their broods far out may at any moment have one or two snatched up and carried away without warning or ceremony.

Taking all the various phases of the magpie's character, it does not show to advantage, and whatever may be its reputation as a pet bird or ornament of the country side, as a frequenter of the game preserve it is unmistakably noxious, and one of the worst natured of the many mischievous birds which at one time or another prove their destructive habits in game covert or poultry yard.

Impudent and mischievous as is the magpie, nearly equally predacious and quite as bold is the jay. Although its indiscriminating appetite leads it to the destruction and consumption of many and various things, quite unnoticed as means of food by the piet, crow, or rook, it is far more vigilant in its search for provender than any of these, and consequently is nearly as destructive a visitor in game coverts as the birds hitherto noticed. It is in the spring of the year that its great love for eggs, whether large or small, fresh or stale, leads it to commit the havoc which has made it so notorious; and when the song birds go to nest, and the pheasants, grouse and partridges are similarly occupied, its ever attentive observation is productive of results disastrous to the gamekeeper as satisfactory to its gaudy and impertinent self. No sooner are the eggs hatched than the "oak jackdaws" are again observant of the actions of the parents, whenever these are away in search of food for their young or

leading them forth to find it for themselves; a moment's absence in one instance, or a straggling weak-limbed chick in the other, invariably results in a diminution of the family circle. Young rabbits and youthful leverets are also in the category of this bird's victims, and often a whole batch of very inexperienced little conies, totally unaware of the malicious intentions of the bird near at hand, are quickly snapped up one after another, until but one, two, or perhaps none are left for the consolation of their presently returning dam. We have caught many jays in spring time, when young rabbits are as plentiful as they always seem to be when the corn is "just beginning to get up a bit," by first catching a few of the little conies and using them as baits, for the benefit of their community.

There is no need to enumerate in detail the game birds, &c., which fall victims to the jay's rapacity at one time or another, for, without a single exception, all the game-keeper's charges, whether furred or feathered, are liable to be attacked and taken by these destructively-natured birds. The jay, however, also consumes its share of insects and moths, beetles and caterpillars, besides various similar creatures of the grub description, "preferring the soft, fat, and full-bodied specimens to those of a more slender shape." Of the vegetable provender of this bird, berries and fruits form the most considerable portion, especially during autumn, and when cherry orchards offer a plentiful supply of food, into which this bird "pitches" with considerable vigour. Not content with the fruit even, it has a most pernicious habit of stripping the

trees of the bark of, we believe, the new season's wood, thus doing damage to a great extent.

Although found in nearly every district throughout the kingdom, and to a considerable degree in some localities, it is more definite in the choice of places which are considered to be suitable haunts than is the case with the magpie, and notwithstanding the fact that it will, in pursuit of food, continually frequent every covert within reach of its domain, it is, however, true that it has a preference for certain descriptions of woods and plantations, to which it invariably resorts at night, during stormy weather, and in which its nest is constructed. The jay can neither be termed a solitary nor a gregarious bird, as it seems at one time to prefer the first form of life, and at others to find pleasure in the company of its congeners, chiefly before, during, and after its nesting time. Its tastes are inclined towards thick woods and plantations, where the trees are large, high, and standing close, where the foliage is dense, and deprives the place of a portion —if small—of its sunlight. Where larch, spruce, and oak trees are mingled in an irregular manner are the favourite haunts of this bird, and it will be further noticed that a clump of oaks near at hand, but separate from the plantation, will greatly influence the jay in choosing its place of resort. Further, any rough and thick coverts where the bird can more easily discern anyone approaching than *vice versâ*, are also in request.

When on the hunt for any of its ordinary descriptions of food, the jay has a cunning way of working along the hedge, particularly along banks with large bushes, such

as hazel, growing upon them, its movements being a series of short flights and hops from branch to branch and bush to bush, during which progressive manœuvres it can scarcely be noticed. Further, it is very adept at taking advantage of any means for concealing its flight, and when disturbed, will often, to all appearance, get up on one and drop over to the other side of a hedge, while in reality it has immediately, when out of sight, turned sharp round, gone up the bank close to the ground for 50yds., and securely ensconced itself in the thickly growing branches of a hazel bush or mountain ash; and thus many chances of shooting the bird are lost by waiting for a better one. If you mark one of these feathered varmints into a tree it is most difficult to actually discover the bird, even when it is easily within gunshot. It invariably, if it be a tree with low branches, *appears* to pitch upon the *nethermost*, which is rarely the case actually; but, even if it do, it quickly hops up branch by branch until close to the topmost, and, getting out on the side farthest from you, is away before you have discovered its whereabouts; while, on the other hand, if the tree be nearly devoid of any boughs on its lower portion, the jay flies at it, and dodging quickly up behind, goes straight up to where its temporary concealment is possible. A more difficult bird of its size to follow with the eye we do not know nor wish to, for if its existence be associated with as much annoyance and fruitless search as is the jay's, we had rather consider ignorance a bliss.

"The ordinary note of the jay is a rather soft cry,"

which is, no doubt, the case, but as its extraordinary notes are so continuous, shrill, and rasping, one would find it rather difficult to instance the soft cry, which is said to be the natural noise of an unnatural bird, and, as far as our experience goes, we would call it one of the most harshly voiced birds of a, by no means, dulcet toned family, always ready to screech out a warning of danger, whether such be at hand or not, and at all times a most egotistically loquacious feathered varmint. As a recent magazine writer most excellently puts it: "The jay is one of the most impertinent scolds, garrulous chatterers, mischievous thieves, and shameless robbers to be found among birds. It is," he quaintly remarks, "devoid of even the least semblance of a conscience; hence it is a perfect type of total depravity on the wing. Being cunning, vigilant, and unscrupulous, it will dare almost anything a bird may, and descend to any depth of infamy that the most villanous human being could imagine. I have known it to devour the eggs and young of finches, sparrows, and other weak birds, and even attempt to treat the parents in the same manner. It appears to actually destroy nests out of mere wantonness, and when it cannot eat the eggs it pitches them on the ground. It attacks hares and squirrels caught in traps, and tries to kill them by pecking out their eyes; and a flock of them will often spend the greater portion of a day in jeering at and worrying some wretched bird that cannot escape them, or in roving about a hole in a tree in which a squirrel has sought refuge. They assail every feathered creature less in size than an eagle, and 'mobs'

of them frequently congregate round a hawk or an owl and pounce upon it at every available opportunity until they injure or kill it, or force it to take refuge in a crevice of a tree. Although the jay is a great enemy to all other birds, it has one redeeming quality—though a sportsman might not think so—and that is, that it announces the presence of a man with a gun to all the feathered creatures in the forest. The moment they hear its harsh clamorous cries they hasten away to safe quarters, and leave the fowler execrating that garrulous sentinel. I have often been compelled to kill jays when after grouse in the woods, in order to get an opportunity of obtaining a single shot at the objects of my search, but even in their death struggles they kept scolding in their most grating and defiant tones. It is doubtful, however, if they act the part of sentinels from any sense of kindness. Some persons are positive about this matter, and assert that they do it out of mere mischief to annoy the sportsman, and they go so far as to say that nothing on earth gives a jay greater delight than to almost scare the life out of its forest companions and send them scurrying in every direction, while it sits perched on a tree and hoarsely mocks them." This most excellent description of the jay's character brings into considerabe prominence all the vicious characteristics of this most intolerably mischievous bird.

The nest of the oak jackdaw, jay piet, or jay pie, is rather flat in form, the materials sticks, grass and fibrous roots, the former being used as the foundation upon which the latter are laid to form a fairly even nest. The

situation is invariably at considerable height, and, for a man, often placed at an inaccessible point, so that it will be found most advisable to shoot the old ones when opportunity offers, the nest being unattainable.

CHAPTER XLV.—WINGED VERMIN.

Taking Magpies and Jays.

THE magpie is the most uncertain bird to take we know of; it is undoubtedly more wary, though less shy, than any other of the winged vermin, but, in addition, is possessed of more curiosity and daring inquisitiveness. We have on many occasions trusted solely to its mere curiosity to effect captures, and have often succeeded when the magpies came prying and peeping into the corner where we were busily employed. The jay, on the other hand, although possessed of some amount of inquisitiveness, is a sly, wary bird, and invariably evinces—often with very good cause—considerable distrust in the movements of men.

Before proceeding to discuss the best way to employ traps with a view to the capture either of magpies or jays, it may be advisable to devote some attention to the relative merits and distinctive features of the traps most suitable. We have endeavoured, so far, to draw some distinction between the gins most adapted to the different birds, and in such wise that those mentioned as suitable

for crows and rooks are, to a certain extent, equally adapted for magpies and jays, while those we now intend to describe will "come in handy" for the various winged vermin presently to be considered. Thus, either or all the traps and gins mentioned in connection with the crow and the rook may be brought into use to take either the prying magpie or the wary jay; their setting being, as far as the plain manipulation and covering of the traps are concerned, exactly similar, although their position in various and different situations may be otherwise.

Some go in for large gins, having widely-opening jaws and requiring a heavy tap to spring them. We, however, favour smaller-sized ones than the ordinary rabbit trap, quick-striking, and requiring but a slight weight to draw them. The best and most suitable of this sort which we know is Lane's (of Wednesfield) No. 4 best Dorset Vermin Trap, 3in. in the jaw. These gins cost, compared with other vermin gins, slightly more, but are correspondingly superior, being as well made and as well finished as any rabbit trap. The springs are quick, the catch well formed and fitted, and the teeth are set so as to give an excellent grip without cutting, being, moreover, well defined and numerous. The chains fitted are also superior in make and finish to the usual run of these articles, and the trap altogether is cheap and excellent in every respect.

Some more traps with which we have made acquaintance are also made by the manufacturer just named; and, although intended for the capture of very different animals than those for the taking of which we would recommend them, their comparative novelty of design and handiness

make them too important to be omitted here. Fig. 36 represents a small trap with the large title of "Single Spring American Steel Musk Trap," with which appellation we have no fault to find, except to advise the omission of "American," for to us it seems that everything which has only the fact of its being Yankee to recommend it is invariably so badly made that to term this excellent little trap American is unwise, whether it be from "the other side" or not. As will be seen from the drawing, although the

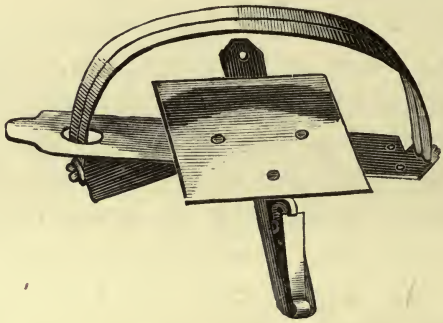


FIG. 36.—SINGLE SPRING MAGPIE TRAP.

general principles of the gin proper are retained, the trap is a circular one, and being, in addition, made entirely of steel, its size is sufficiently large and weight small to render it remarkably handy. It measures 4½in. across, and is easily covered with one inch of earth. The adjustment of the spring is novel, for whereas in most circular traps it is pushed into a straight position to obtain a tension, in this case such an arrangement is reversed, the broad base being bent, and the spring, when setting, having to be forced down

into similar form. Each gin is provided with a handy little chain, strong, but light, and the whole may be bought at 10s. the dozen, a price, in our opinion, remarkably reasonable.

To the uninitiated all circular traps are decidedly difficult of manipulation, the trouble of setting them often involving great exercise of care and strength; while, as a matter of fact, they are, for the most part, considerably easier than an ordinary rabbit gin. To set the trap just described, which we prefer to term here the "Single Spring Magpie Trap," grasp it by the cross-piece, to which the chain is attached, with the thumb (above) and first finger (below) of the right hand, then with the left press down the spring, meanwhile extending the right thumb up to the jaw, which can be pulled down as soon as sufficiently released and be retained by the thumb, the other hand meanwhile being used to open down the opposite jaws and fit the catch over it, when the whole simple business of "sotting" is complete, in a far easier and safer manner than is otherwise possible; and, moreover, as "tickle" as the most exacting person could desire.

Fig. 37 shows the same description of trap, provided, however, with two springs to act simultaneously on each side of the jaws, which are formed more like a square than are those of the one previously described. In other respects, however, it is precisely similar, the additional spring causing it to strike quicker and harder than is the case with the single spring, so that, owing to its rather larger opening of jaw and increased holding power, its employment for the capture of foxes is possible, although, when gins are

at hand, not advisable. It is, notwithstanding this, a very serviceable trap for magpies or jays, particularly in situations necessitating the covering of the gin with moss or

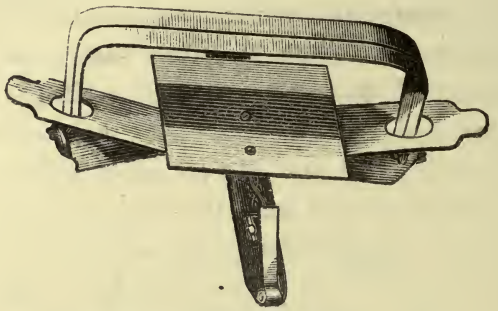


FIG. 37.—DOUBLE SPRING STEEL TRAP.

thick grass. The traps are light and serviceable, each provided with a good chain, and are 6d. each dearer than the foregoing one with the long name.

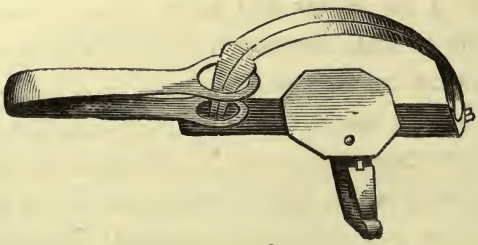


FIG. 38.—FOLDING SPRING TRAP.

Fig. 38 represents a third wholly steel gin of similar type, and suitable for the birds under discussion. This is termed a "Single Spring Musk Rat Trap," and is in

every way as good for the purpose we want it for as either of the other two. As will be seen, a different kind of spring again is fitted, one termed a folded spring, being very quick in striking and holding very tight. They are very handy, light, and well suited for magpies. Round or square jaws may be had, varying from 4½in. to 6in. Price, 14s. to 17s. per dozen, with chains.

These three traps are all of excellent design, and very useful when one desires to set thickly but cannot be cumbered with the weight of many gins, and their success in taking winged vermin should well warrant their more general adoption. We may appear loud in praise of Lane's gins, but there is no reason, when one finds good articles at cheap prices, to keep the knowledge to one's self.

The next trap deserving attention is the pretty generally known one represented at Fig. 39, and generally termed "The Hawk Trap," by reason of its being mostly employed for the capture of that class of winged vermin, and about which we shall presently have something to say. These traps are made of iron, the most convenient size being the 4in. or 5in. The framework consists of a circular frame, ⅛in. thick and ½in broad. In this, on opposite sides, are fitted the eye-pieces, into which the jaws are placed. At right angles to these, beneath the frame, runs a cross-piece riveted on to the former, and which carries the plate and flap. The spring is fitted on the catch side of the jaws, of course, being bolted on near one side and formed round till it grasps the jaws at the other, some two inches above the frame. The general features are sufficiently apparent in Fig. 39. This trap is, to the tyro, quite incapable of

being set, unless he be of great strength ; sufficient, indeed, to press down the spring by a grasp of the hand. As a matter of fact, it is far easier of manipulation than the ordinary rabbit gin, there being no easier trap to set if it be attempted in the right manner. For the benefit of the uninitiated we give the following instructions: Grasp the trap by the left hand, so that the spring can be slightly

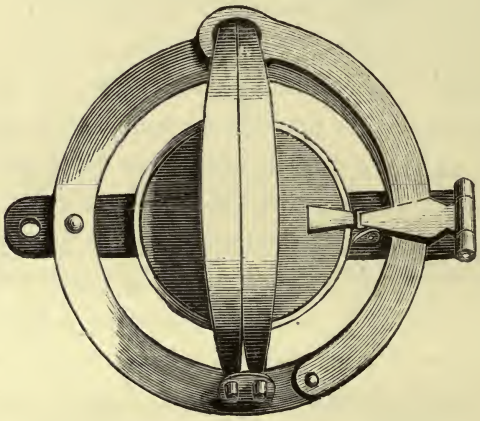


FIG. 39.—HAWK TRAP.

pressed down with the pad of the thumb, the fingers of the right hand being meanwhile beneath the opposite side, and the thumb extended to pull down the nearest jaw. Commence by pressing down the spring, and as soon as the jaw gives it will be possible to pull it right down without the slightest exertion, when the other can be also opened down, the flap put over it, the catch fitted, and the trap is set as speedily and easily as possible and without

any risk to the fingers. It will be noticed that this gin can be held open by one hand only. Some are made with plain jaws, which we like when not too close; and some with toothed jaws, which we prefer in all cases; while some can be obtained with an iron sprig instead of the plate—whether an advantage or otherwise, we cannot say, never having tried it, but as far as we can judge it may be recommended under certain circumstances. H. Lane makes excellent "Hawk Traps," and, as far as we know, the best; although some we had from Shave, of Birmingham, ran the former rather close. Some persons almost rave about light iron traps; we do not, and, except the descriptions noted above, prefer a good solid one that will keep its shape, and retain its position when set—a desideratum not by any means always present in lightly made traps.

Having discussed the various traps suitable for the capture of magpies and jays, we devote some attention to the most eligible baits. A dead rabbit is undoubtedly tempting, especially if recently killed. The magpie—the jay nearly as much—has an insatiable tooth for a rabbit, and this at any time and in every season, be food scarce or plentiful. Eggs are another first-rate bait for both birds; they seem to have such attraction for the jay, that at the sight of one or two hen's eggs, in spite of the suspicious character of their situation, and the eminent unlikelihood of any fowl having deposited them there, it will throw aside its usual shrewdness for a disastrous acquaintance with the game preserver's wiles. We have known jays in the middle of winter, with snow on the ground, find discomfiture and death in four or five eggshells placed in a conspicuously

open portion of a distant covert, and that not once but often.

Various birds, especially game birds, are capital baits for magpies. It is not necessary that any be killed for the purpose. Such may be employed as one may find lying dead about the covert or field which may have died naturally by vermin. Where pheasants are reared in any quantities there will occasionally be some of this description, and which may be advantageously employed as a lure. Young chickens and ducklings too weak to sustain existence may be employed in association with a set gin or two, and pullets which chance to die are also very good bait.

Mice of all kinds, young and not too large rats, a mole or a hedgehog, are often very successful, especially the first named, and we have often found a few gins with mice tied on the plates singularly attractive when gingerly set and covered in pastures where magpies are wont to congregate. Another and rather unwieldly bait under the circumstances is a sheep's head, or even a portion of a sheepskin, or a young dead lamb. In either case, if exposed in a field, any magpies passing are sure to pay one of the three a visit.

When baits are employed, the best place to take magpies are certainly in fields and open parts adjacent, or in the near neighbourhood of coverts and plantations. We think this bird hardly cares to search for its food within cover, but rather prefers to pick it up in the open, although sufficiently near shelter to retire quickly to it in case of need. A good description of trap is the gin of a proper

size. It is easily tilled, "tilling" indicating not only the actual setting but the covering, &c., in fact, the whole operation necessary before the gin can be left. A vermin trap is most suitable, as it will in all probability be placed upon or rather in grass, and this being the case, either of the special traps figured on pages 476 and 478 would be more troublesome and but equally efficacious. The setting of a gin intended primarily or solely for magpies should be decidedly tickle, but not extremely so, for it is obvious enough that too "tickly" set traps are very liable to spring of their own accord or by touch of some small bird which may perchance hop on to the plate. The setting should be of such a character that the means and materials employed to effect the covering very nearly set off the gin, which lightness is easily determinable. For allurement in open places, such as grass fields and meadows, there is nothing to beat a rabbit about half to three-parts grown. It should, before being pegged down, have a portion cut off its side more towards its back than belly, so as to show the flesh along its loins, which done, the bait must be strongly pegged to the ground in such wise that it may appear to be lying naturally on its side as if killed by some furred or feathered varmint, and a portion of the inside exposed as if drawn upon for supplies by any hungry magpie. The intestines should just appear, and the eye be fixed open. A rabbit arranged according to these instructions will be found most alluring to either of the two birds whose capture we are considering.

The position of the traps set round such a bait may be varied according to fancy, nor does it make much difference

where they are placed. It may be most advisable, however, to put one behind the rabbit's head and one at its back where the flesh shows, and a third between its fore and hind legs, the springs in each case lying towards the right hand when setting them. Of course, the tilling must be made in the usual careful manner, and a hurried slovenly mode of covering avoided as ineffectual. Jays have a habit of working their way up hedgerows, covered on the top with a fair amount of growth, more especially when these are plentifully threaded with rabbit runs, the chance of discovering a young rabbit alive or dead being one of the chief inducements. We may, therefore, take advantage of such favourable occasions for catching these handsome but wily marauders. Having determined upon a suitable hedge, and found eligible spots, say two or three in sixty yards, a young rabbit should be pegged down at each, and two neatly-covered vermin-sized gins set one on each side of the bait. If the jays be in the habit of frequenting the hedge—and unless they do so it is useless trying—one or more are sure to be captured, often more. We once took five at one spot under the conditions described, and could, no doubt, if we had had opportunity and time to till further, have taken twice as many again.

Jays in the open are not easily trapped. They are remarkably uncertain in their habits; one day a dozen or more may be seen busily employed in a field, and appearing to be permanently located, while on the next they are off to a similar place at a by no means short distance away. In young plantations—the smaller the trees the better, where the ground is divided out by paths or drives—jays

are particularly disposed to forage and, as it is termed, "fish about." They will get on the small trees and hop in and about them, run under them, and work and search about on the paths and drives at irregular and alternate intervals, bent on mischief, we may rest assured, in all probability searching for eggs—pheasants' eggs, if there be such game on the place—searching notwithstanding any inappropriateness of season, and unconcerned whether it be spring or autumn. Here, again, the coney becomes useful, and one arranged in the same manner as described above for the magpie will, in newly-planted coverts of larch, spruce, or oak, be found of equal efficacy. Also under such circumstances are eggs very tempting, and a neatly-placed and formed nest of four or five shells, put for preference at one side of a little open patch amongst the trees, should not fail to entice the feathered marauders into neatly-set gins placed in front of the artificially-formed nest.

When one is trapping for rabbits, especially adjacent to covert, the operation will invariably be closely watched by one or more of the pied gentry, especially during the earlier portion of the day, say, in summer, at about ten to eleven o'clock, when the magpies are in peculiarly active contemplation of anything which may engage their attention. Thus, if one should leave a rabbit dead in a trap when removing the catch of the morning, by the time mentioned, some half-dozen or more of the birds are sure to have discovered it, and, as a matter of course, made closer acquaintance with its gastronomical qualities. If one should now make it his business to disturb them at their meal, in

order to set two or three quick-striking gins around the dead and mauled coney, and leave them for twenty minutes or thereabouts, he will doubtless catch one if not two magpies. We were singularly fortunate on one occasion, when working in this manner, after setting two gins against a rabbit. We had not retired more than a hundred and fifty yards before we had two in the traps, and so returned and reset them, and were about the same distance away when two more magpies were in difficulties. A third setting resulted in one more before the afternoon. All five were fully grown young birds.

Jays have predilections for certain trees, chiefly oak and ash, the former of not large size, and we have on many occasions found a trap or two fixed on the branches about two-thirds up and close to the trunk prove efficacious. The traps represented in Figs. 29 and 30 are the most suitable.

Some gateways are particularly affected by magpies as places from which to observe the surrounding fields, &c., and the events occurring therein. Nearly every gate has a side-piece by which it is hung to the post a foot or so higher than the top bar, and any magpie taking a look round will doubtless get upon the more elevated portion. Therefore it is advisable, if one desire to take the frequenters of such positions, to place a trap, for choice the single-spring magpie trap (Fig. 29), upon the top of the wood, and having set and adjusted it, fasten it to the wood by means of a large wire staple over the ring of the chain, which must hang down on the post end of the gate. If one consider the place suitable, and be sufficiently at home

in the manipulation of a chisel and hammer, the top of the wood may be suitably hollowed out to receive the trap, thus greatly increasing the chance of making one or several captures. The gatepost itself may also be treated in like manner if of wood; while, should it be a stone one, a trap may be plainly placed upon it, and fixed by string, wire, or thin chain in order to prevent its being removed or fluttered away with by any bird caught.

One way of taking magpies in particular, and winged vermin in general, requires some preparation and trouble, and we had therefore better describe it, as it is very suitable for large coverts.

Some few posts must be obtained, numbered according to the quantity required, about 10ft. in length, and sufficiently large in diameter at one end to take one of the small-sized hawk traps (Fig. 39). They must be hollowed out to just receive one of these gins on the top, and be let into the ground about twenty yards out from the edge of the wood, plantation, or whatever it may be, until but 8ft. are exposed. The posts should be from 100 to 200 yards apart, and be fixed in as suitable a position as can be determined upon. The gins are set in the part hollowed, left uncovered, unbaited, and the chain of each trap fastened down the side of the post by a strong staple over the ring. Such decoys as these often prove well worth the trouble and small expense, their erection causing many vermin birds—more particularly hawks—to be caught, although magpies and jays are the most common. It is necessary to remark that "tickle" is not required here,

rather the reverse, and only the hawk traps are eligible, the other description of under-spring traps being too lightly drawn; hence, if employed, many other birds—such as thrushes, blackbirds, and their like—would be needlessly sacrificed.

CHAPTER XLVI.—WINGED VERMIN.

The Wood Pigeon.

THE wood pigeon is, in the strict sense of the word, not vermin at all, but, inasmuch as it is a most troublesome farm pest, and requires some skill in order to capture it, we have included it in this category. This bird is, no doubt, a great favourite in its way, but, unfortunately, is possessed of habits which continually bring it into disrepute with the farmer, and are really of too serious a nature to be overlooked by him, more especially in these distressful days of agricultural depression. It is chiefly the growing crops which suffer from its depredations, and in those districts which, being thickly wooded, are most conducive to a multiplicity of wood pigeons, it becomes so numerous as to frequently cause considerable anxiety to the agriculturist in the matter of his spring-sown corn and the like. It is, moreover, a bird of remarkably voracious appetite, and it appears decidedly of epicurean tastes, the young corn, tender plantings of succulent kind, &c., being always held by it in better esteem than food more matured and less savory. In the early part of the year the various

descriptions of spring-sown corn suffer most from the depredations of the cushat; wheat, however, seems to be most delectable, and consequently receives more attention than do barley or oats; indeed, several instances exemplifying this preference have come under our observation. As the wheat plant advances, it becomes unacceptable, and so recourse is had to young cabbages and other plants, lucerne, vetches, peas, beans, and anything of a like nature. We have further remarked a *penchant* on the cushat's part for the leaves of the wood-sorrel. Freshly planted-out field cabbages and the first budding swedes will likewise suffer spoliation, and, unless serious steps are taken, a colony of wood pigeons will soon clear an acre of every cabbage plant on it, or at least devour the heart out of them all, which is as bad. During summer various wild berries, such as black and whortle berries, form the chief provender, while charlock, ragweed, wild mustard, and the like oily seeds, together with small esculent roots and green clover, go to make the sum of this bird's multifarious food. Immediately the corn comes into ear it is again deemed suitable, and is in good demand; and filling their capacious crops to their fullest extent with the unripened but decidedly succulent grain, wood pigeons often present deplorable examples of feathered greediness and gormandising. As autumn advances their diet is changed to acorns, beechmast, and still unripe hazel nuts, ivy, and other berries. As to beechmast, their craving for these nuts is remarkable, and so much do they often gorge themselves that their flight is hampered and their general shyness lessened, consequently shooting them then becomes

almost as easy as missing them at other times. In dreary winter time the pigeon has to content itself with what it can obtain, but we have rarely killed a thin one even in the severest weather. Turnip tops seem to be its most ready means of subsistence.

Apart from its mischievous nature, the ringdove, cushat, cushat-doo, queest, or other rustic appellation it may have, is a welcome ornament of the country side, being an interesting bird, and one which deserves protection from extermination, although in unchecked numbers it is not to be desired. Its habits we need not describe, they are well enough known; but as to the mode of capture some particulars are necessary. We would first signify, however, that wholesale slaughter by means of poisoned grain and the like has none of our sympathy, being both unnecessary and reprehensible. If wood pigeons must be killed, at least give them a chance, and the means suggested will do so.

To trap these birds the same rules hold good as to gins, &c., as were detailed in respect of crows and magpies, but the "tilling" is different. When one, day after day, visits a field and notices on each occasion a number of wood pigeons rise from the near neighbourhood of a certain spot, one may rest assured that on approaching it an almost entire clearing of the corn will be discovered within limits of circular extent. A few ordinary-sized rabbit gins should be carefully distributed and set about this clearing, neatly covered, and some few grains of corn, large white oats for preference, be scattered over each. These settings will assuredly result in the capture of one or more of the feathered marauders, which will be amply sufficient to scare

the remainder to less unpropitious feeding grounds, and it is invariably the case that no return is made till the corn is in ear, when powder and shot, with a straight aim, is the most convincing argument. Sometimes several of these clearings are made and frequented by the cushats, and so, having made examination of the field, one will be well able to determine how many gins are necessary. The traps set should be visited every morning between ten and eleven, otherwise any pigeons caught may be destroyed by hawks, and the gastronomical qualities of the ringdove are worth the trouble of obtaining these birds unspoilt. The other situations for gins for wood pigeons must be determined by the mischief which may necessitate their capture, but in patches of field cabbages and about young turnips most instances will occur. In addition to these, the traps figured in the last chapter may be employed in various situations, which may at different times be available or suggest themselves to the game preserver.

CHAPTER XLVII.—WINGED VERMIN.

Hawks and Owls.

IT has so long been the custom to see in all hawks, and even owls, the personification of "varmintcy," that we shall, no doubt, be held by many to be very wide of the mark in claiming for the owls and most of the hawks far greater leniency at the hands of the game preserver than has hitherto been accorded. Although there are several hawks and one or two owls whose habits, if strictly inquired into, would lead to no pleasant disclosures, there are only two or three whose modes of existence warrant persecution by the game preserver. The greater part of the hawks and owls which still bestow their company upon us are now becoming so scarce that, if we want to continue to reckon them among our British birds, their preservation will be as necessary as that of the pheasant and our other game, and it is therefore needful to advise gamekeepers and others not to be too ruthless in the destruction of hawks, but to kill only those whose numbers and destructiveness would otherwise prove a hindrance to the rearing of game.

The hawks which are really destructive can be numbered on the fingers of one hand, and when we count up all the British hawks, the necessity of a wholesale killing of all the members of the tribe is far from apparent. We shall, therefore, only describe those which really exert their predacity in a sufficiently destructive manner amongst game to render their presence in any number obnoxious.

The Sparrowhawk.—This is probably one of the most numerous and destructive of our hawks, and, coupled with its mischievous character, has a most shy and wary nature, so that, although the proofs of its misdeeds are invariably but too apparent, the bird itself is to all intents undetected. None but the most observant are able to study the whole routine of its existence with anything like accuracy; for, except when hunting for its prey, its intense shyness and wildness are far too well exercised to admit of any close notice of its habits. Wooded districts are mostly esteemed by it, but it seems always to prefer closely-cultivated lands—probably as its prey is then more plentiful. It hunts both in the open and covert, preferring, of course, in the latter case, woods where the trees are not sufficiently close to impede its progress, as it flies, sometimes at headlong speed, at others with gentle progress, in search or pursuit of any bird or animal which may be luckless enough to be descried by it. When on the wing it alternates between an occasional exceedingly rapid flight and a sweeping, stealthy sort of motion, acquired apparently without movement of the wings. Should it, thus flying, descry any kind of prey, its flight is changed to a hover, and for a few seconds it scrutinises the object of attention.

It will, further, often select a large stone, stake, tree, or such like, as resting place, from which, during its temporary suspension of operations, it does not fail to keep a vigilant look out. This feathered vermin evidently prefers winged food to furred, but although its chief source of sustenance is found in birds, an occasional rabbit or leveret does not come amiss. The following list probably embraces those which suffer most from this bird's voracity: Young pheasants and grouse, partridges, pigeons, larks, blackbirds, snipes, swallows, sparrows, peewits, thrushes, all finches, buntings, pipits, and many others, so that altogether this hawk has a very good list from which to choose its daily fare. In addition to these, mice of various sorts, grasshoppers, and several kinds of beetles are occasionally consumed. All the small birds are swallowed whole, legs included, so that proofs of mischief done in this direction are not too frequent. Chickens and ducklings are also much esteemed, not to mention coop-reared pheasants when of tender age.

The nest of the pigeon hawk—as it is sometimes called—is rarely of its own construction; most often an old nest is chosen, formerly built and used by a crow, magpie, jay, or wood pigeon, in some fir or other tree—oak or ash for choice; or, perhaps, a solitary jackdaw's nest, in some ruin or neglected house is selected, and becomes the receptacle of its eggs. The sparrowhawk nests in April and May.

The Kestrel.—This is probably the most common of our British hawks, but by no means of the same destructive nature that makes the sparrowhawk so notorious. It is,

however, not always the innocent bird, as far as game is concerned, that some would make us believe, and, although we would not at all advocate any attempts being made with the express aim of taking the kestrel, still it will occasionally turn to harassing young partridges, &c., and thus rightly fall a victim to wiles intended for its congener, the sparrowhawk. For the most part, its food consists of mice, shrews, and a great variety—although not great numbers—of small birds. Grasshoppers, beetles, and caterpillars, frogs, lizards, and slowworms, also form a portion of its provender. As far as its haunts are concerned, there is little to say, for it is fairly frequent throughout the country. The kestrel sometimes travels far afield to secure a nesting place suited to its habits, but there is not much to note respecting its choice of situation for the same. Its other names are "windhover," "creshawk," "hoverhawk," "stannelhawk," "stonegall."

The *Hen Harrier.*—This is another fine hawk, frequenting downs, commons, fens, moors, and marshy expanses, being more numerous in such localities than in cultivated or inclosed ones. It preys almost entirely on game of all sorts and on many moor-fowl, but it is an easily-captured bird. It seems a pity such a really handsome creature should ever be destroyed for the sake of a pheasant or two, or the like.

The *Marsh Harrier,* which is likewise locally termed "moor buzzard," "bald buzzard," "harpy duck hawk," "puttock," "marsh hawk," will also occasionally be found in the trap set for other hawks.

The *Short-eared Owl,* the *Long-eared Owl,* and the

Brown Owl are invariably regarded by gamekeepers as vermin; but although occasionally they may err, their general good behaviour and utility should suffice to preserve them from destruction.

The trapping of hawks is a considerably more difficult matter than the capture of any of the various birds hitherto discussed, and such being the case, it is necessary to carefully note the details the observance of which leads to success. The traps hitherto described are those most suitable, and, with the exception of a newly-invented one, presently to be mentioned, we know of no others. The signs by which one can tell where to trap for hawks are generally pretty apparent in the shape of mauled birds, or the remains of such, which will be mostly met with on the outside of, or along any paths through, a wood or plantation; should the bird discovered appear to be but partly eaten, it may with advantage be employed as a bait to one or two light vermin gins neatly set around it. It will probably be observed that the sparrowhawk hunts the same ground every day; and, that being the case, considerable advantage is gained, as various baits can be placed and tilled in positions where their observance by the varmint is almost certain. Whenever a single tree grows in the neighbourhood of a covert, or a particularly high one within the plantation, one of its branches, thick enough to take a hawk trap, should be cut off at a suitable place, and one of these gins be countersunk on the top and set. It is sure to prove very productive of captures, while the same means recommended for magpies, of placing poles round the outskirts of a covert and adorning their

tops with gins, is equally efficacious for hawks. When trapping for the harriers, there is no better bait than a leveret or a rabbit; but it is necessary to make some observation of their haunts before commencing to trap. Having determined upon these to one's satisfaction, half-a-dozen or a less number of poles must be raised at intervals, height about four or five feet, and the top flattened and dirtied by rubbing green moss thereon. In a day or two,

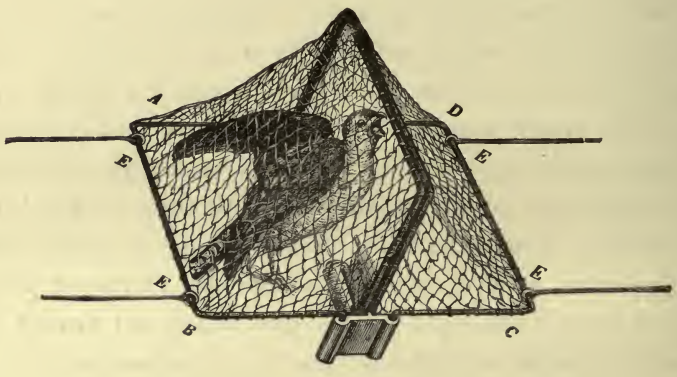


FIG. 40.—SANKEY'S PATENT HAWK TRAP.

provide each with a circular gin, thinly concealed by a circle of moss and in a conspicuous position; arrange the bait in the most tempting manner possible, and, if things have been managed with anything like an eye to business, a fair percentage of the hawks frequenting the locality will be caught. From the two or three examples mentioned, the amateur should soon be able to discover and take advantage of all possible opportunities when the capture of any molesting hawks may be effected.

At Fig. 40 is shown a new trap, invented and patented by Mr. R. J. Sankey, Margate, to which he has given the title of "Gamekeeper's Friend," and, as far as our experience of this most ingenious trap goes, it is decidedly the most useful means of catching feathered game and vermin we know, as the advantages of capturing everything alive are only too obvious. Fig. 41 shows the trap when set (the nets are here not indicated), from which it will be seen that the levers (E, E, E, E, in Fig. 40) which prevent the

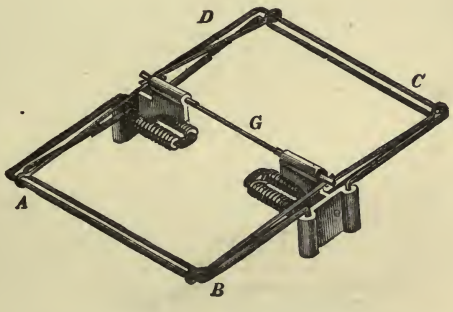


FIG. 41.—SETTING OF SANKEY'S HAWK TRAP.

nets flying up together are held down by the two plungers, kept apart by G (Fig. 41), which, when it falls, releases them, letting them fly inwards, and the nets instantly close over the capture. (A, B, C, and D in both sketches indicate the framework.) We need not go into any lengthy description of how to work this trap, as the instructions and particulars, which are issued by Mr. Sankey, are sufficiently explicit. It is certainly by far the most humane and at the same time efficacious trap we have ever seen.

The taking of owls needs no description, because we have such a firm conviction as to the general good behaviour of our somewhat bulkily-feathered friends, that we would be the last to assist in their wholesale destruction. If any of them, however, adopt bad habits, and, consequently, get into the gamekeeper's gins, then their doom be on their own heads.

PART IV.

MISCELLANEA.

CHAPTER XLVIII.—POACHERS AND POACHING.

AFTER one has killed off all the vermin and reared a good head of game, it is of no use expecting to find it there available for sport when the shooting season comes on unless as much vigilance and attention is given to the prevention of poaching and the detection of poachers as will suffice to ward these gentry off.

Poaching is essentially of two kinds, and poachers of many; but very much less of the real business goes on than is generally supposed, and a great deal more game killing practised by non-professional poachers. We never found strict preservation to result in the prevention of poaching so effectually as when the labourers, &c., were treated in a fair spirit as regards the game. The most advisable way is to make all the men who are likely to go astray take an interest in maintaining a good head of game, and the coverts will go poacher free. There used to exist, and there exists still in many parts of the country, a feeling amongst the labouring men, skilled workmen, and others, on an estate, that the game on the Squire's land

should be respected so long as the Squire respected them, and, if this feeling be encouraged, there is no necessity for the unpleasantness and rancour existing between some lords of the manor and the people upon it. If the owner of the preserves instil into his labourers and all the men working upon the farms, &c., the idea that he trusts to them not to interfere nor permit interference with the game, they will soon fall in with it, and work as assiduously for its protection as they would for its destruction if they were treated in an improper spirit. As a recompense for this, let them have money or game at the end of the season as a reward, and, if they would like a day or two at the rabbits, be it so. No one likes to be suspected, much less to be treated harshly, and if the idea be allowed to engraft itself in the village people that they are thought to poach, or that they dare not for fear of keepers and the law, they are sure to grasp the first and every succeeding opportunity to prove the contrary. In this way poachers are made; they commit the trespass once to revenge themselves or spite their master or landlord. The trespass is found to prosper, and the feeling of paying "the maister" out is found sweet, and is repeated until the man's character is lost and he becomes a confirmed poacher. So much for the labouring man. As to the regular poacher, the ne'er-do-weel, the loafer in the village public-house, he is a common object of the country, generally a labourer, who has always so much work to do that he never does any. He is generally a demure, bland gentleman, most reverential to his betters, and is always going to tell the keeper about this varmint, that covey of birds, and a nest of young

"megpies." This is a most annoying kind of poacher, because he is so dark and so modest over his business that one can never catch him. A little snaring, a little trapping, and a great deal of egg-stealing, are his chief accomplishments, and very often his wife or children have to play a part as well in the latter business, particularly in carrying away the eggs when they bring the man's dinner. At night he will often be busy, particularly in the use of a stick, amongst the pheasants in windy weather, when there is a good moon; or the employment of an air-gun, or one of those complicated contrivances, a poacher's gun, which unscrews into three or four pieces and goes into the inside coat pocket on one side, while it is nicely balanced by the spoil on the other. The net is in his hands a very effective article, and is employed for grouse and partridges. Hares are a speciality, taken with wires and gate-nets in the fields, and bag-nets chiefly in covert.

Besides the regular poaching labourer there are the men who only occasionally have a turn at poaching. They are generally a great nuisance, because one never knows when they are at their nefarious practice, and they are not worth watching continually. For these kinds of game stealers there is nothing so effective as to lead them to believe that they are always being watched. The keeper should make it his duty, whenever he can, just to drop down upon them suddenly when at work or appear upon the other side of a wall as they are going home or coming to work; meet them accidentally upon Saturday night, and see them the first thing on the Sunday morning after. Nothing deters them so much as this.

On the whole, we do not think the ranks of the poachers are recruited so much from the farm labouring classes as from those living near, and not engaged in agriculture. Masons, village tradesmen, posting stablemen, carpenters, *et hoc genus omne*, contribute far more poachers than the labourers do, and upon such men we would be harder than upon farm people, because the latter have the opportunities so frequently afforded them for poaching, and the others seek them. They have, moreover, a knack of getting permission to use a gun to topple over a few pigeons, or perhaps to try their powers on a few conies. This leads them on, and they soon make a little poaching a regular item in their monthly routine. These men are for the most part owners of dogs of very dubious breed and character, but which, when it comes to picking up a hare or so, or "chopping" a few rabbits, are seldom deficient.

So far we have treated only of the poachers which infest semi-preserved districts. They flourish only in parts where on one estate game is strictly looked after, whilst on the next it is anybody's property, *i.e.*, if there be any.

The worst type of poacher, however, is that coming from the large towns, and he is generally a scoundrel in every sense of the word. Such men poach as a means of making money, and in their endeavours so to do they will stop at nothing. They generally work in gangs of from three to thirty, and when sufficiently numerous will take the coverts by storm, and set keepers, watchers, and owners at defiance. When in small gangs they will often offer resistance of the most stubborn kind, and many a scene of bloodshed has been enacted in collisions with desperate ruffians of this

kind. The town poachers' favourite work is done at night, and they endeavour to keep within the number of five, and so avoid the severer penalties which the fact of being in larger parties renders them liable to. They have, moreover, favourite modes of working, by employing a horse and trap, and skirmish about from place to place, taking a shot here and another there, being off again before the keepers can get near them. They are also the purveyors who supply partridges early enough to be in London on the 1st of September, who send grouse packed in coffins, and commit other facetious but remunerative misdeeds. The town poacher, furthermore, is frequently a dealer in poached game, taking it from the local rural ones, and disposing of it at a lucrative price; and there are regular receivers of poached game in nearly every country town.

Besides these there are the men who poach not so much for the purpose of making money as mostly from pure love of sport. They chiefly infest grouse moors, and are sometimes very destructive. In well-preserved districts they are absent, but in badly-preserved ones they and the gentleman poacher often come in for the best share of the sport therein obtainable. Of the gentleman poacher we may say a few words with advantage, because we have noticed that there is a great deal too much of "I'm a gentleman and can do what I like!" feeling about. Anyone who preserves should be most careful never by any chance to infringe upon his neighbour's rights, or allow his friends or dependents to commit a similar indiscretion. Not only does this produce ill-feeling between the proprietors, but the feud invariably reaches the keepers, and the amount of mischief these latter

will do one another in the destruction of game must prove disastrous.

Further, there are some well-to-do men who think nothing of doing a little poaching now and then, chiefly in localities sparsely populated, where keepers are scarce, and from whence the records of their misbehaviour are not likely to reach their acquaintances. Their favourite plan is to ask permission to take a short cut through one's ground, and "presume Mr. So-and-so will not object to their taking a shot at anything which may cross the path, provided the game is brought up to the House; it is merely the sport that is desired." The best answer to this sort of people is to request them to keep clear of the place altogether.

Upon the subject of egg-stealing we have already spoken, and for this kind of poaching, game preserving, as now carried on, is to a great extent responsible, for it has largely become the fashion to judge the season by the quantity of game killed rather than by the sport afforded. Consequently the demand for eggs is so large that it has caused an almost universal style of poaching; for, of the number of pheasants' &c., eggs bought, not one-half are sold by the owners of pheasants, the rest being supplied by local dealers, who get them from the stealers. We think we are well within the mark in saying that it will never be possible to stamp out this practice until the Excise takes the matter up, and includes the selling of game eggs under the provisions regulating the sale of game, imposing a £2 licence.

The prevention of poaching is dependent, in the main, upon the gamekeeper; but, as we have tried to show, it depends also upon the proprietor of the preserve to

no inconsiderable extent. Of the duties of gamekeepers in regard to poaching we can say but little beyond giving the chief qualifications and duties of a good keeper, and detailing such aids as he can enlist in combating the attacks of poachers. A perfect gamekeeper is invaluable; he must above all things be thoroughly devoted to his work, and be prepared to carry out his duty under all adverse circumstances. Civility, firmness, and courage should be his chief characteristics, besides knowledge of all details of his craft, both in the practical as well as the legal portion of his business with regard to poaching and poachers; he should never commune except with his master, and on this subject he should be implicitly trusted. With regard to the vexed question of the keeper carrying a gun, we have but one opinion, and it is in the affirmative. If a man be fit to be a gamekeeper he is fit to be intrusted with a gun; but at the same time, when he uses it for vermin killing we would withdraw the right. Its uses are innumerable in this respect, but its abuse is most reprehensible. The number of keepers necessary on a preserve depends upon circumstances too numerous to detail. The more roads and paths about an estate the more keepers are required. We should always endeavour, moreover, to enlist in an unofficial way the services of any labourers with outlying cottages as watchers, never giving them power to act in repressing trespass, but employing them simply as informants.

Whenever any raid by more than two or three men is about to take place, it is, in nine cases out of ten, known beforehand, and the man who holds the information will generally tell it if appealed to in a proper manner. No one

can do this better than a sharp labourer, whose resort to the local ale-house for a gossip occasionally would be unsuspicious. A stray word as to the keeper's whereabouts by him—although misleading—would be accepted as gospel, and is as sure to gain hints of any projected enterprise as it is to be believed.

There is a good deal to be learnt as to the proper mode of capturing or interrupting poachers. Nothing puts them off so easily as to know they are being watched or looked for. Uncertainty as to the whereabouts of the keepers is to them a most disturbing influence, and knowledge of where they are is regarded as a boon. In the case of serious raids, when an affray is expected, the keepers should always endeavour to surround and overmatch their opponents. Watchers and helpers should be instructed to work in threes: this gives them immense advantage. Guns should, if possible, be dispensed with; but we should never allow our men to encounter the determined ruffians who may comprise a gang other than on equal terms, and should freely intrust reliable men with revolvers, to be used, be it noted, solely in defence of life or to threaten. Whenever possible, the aid of the police should be obtained, because they possess many important powers, particularly in regard to the highway, on which gamekeepers have no power to act unless called upon by a constable.

The powers of a keeper depend on the possession or otherwise of a deputation from the lord of the manor. Without this his powers are limited to requiring trespassers sporting to exhibit their licence and to deliver their names and addresses. A deputation empowers him

to order them to quit, to confiscate nets, dogs, traps, fire-arms, or any other means for taking game. He is also empowered thereby to arrest night poachers under 1 & 2 Will. IV., c. 32.

Of course, there are keepers and keepers, and it remains for the master to discriminate between the good and the

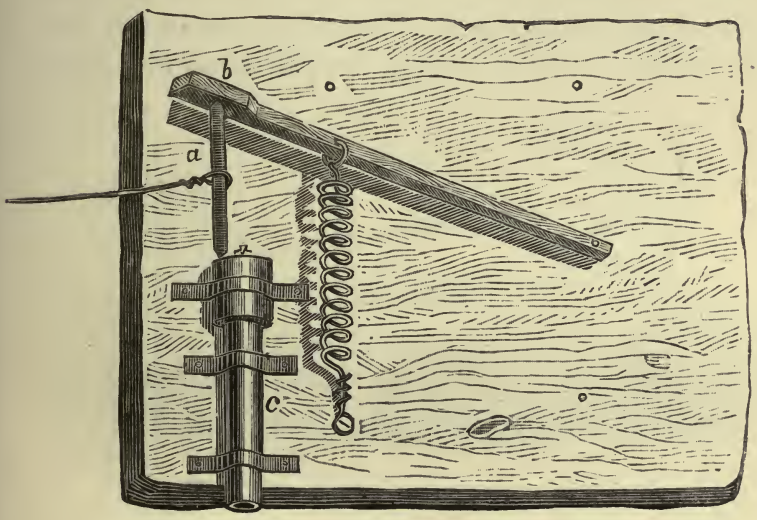


FIG. 42.—ALARM GUN.

bad; but, without going into this matter, we may say that there is no greater poacher and no greater enemy to preserving than a bad gamekeeper.

With regard to the mechanical aids to gamekeepers in not exactly warding off poachers, but in giving notice of their presence, it is advisable to note a few of the most approved types of alarm-guns. These machines are for the most part

poor affairs, but there are one or two good ones of considerable use. Of course, they can be made roughly and cheaply enough, but we do not like rough things, and alarm-guns depending upon their "going off" for their utility are not of much use if their roughness prevent them. The simplest form of alarm is a piece of thick gas-pipe, with a choke-piece screwed on at one end, the piece having a gun nipple screwed into its centre. This pipe is loaded and the nipple capped, the outside being smeared round with suet

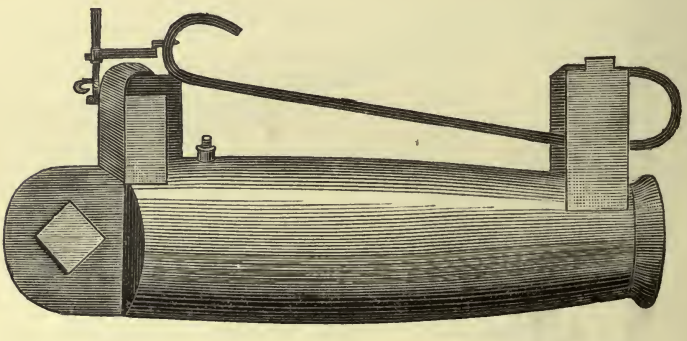


FIG. 43.—WIGG'S ALARM GUN.

and beeswax. When the bolt is withdrawn the striker falls and the charge is exploded. A better idea of the form such an alarm may take is shown at Fig. 42. Attached to the trigger (*a*) is a line, which is stretched through the plantation. On being pushed against by people moving in the wood (*a*) is removed, the striker (*b*) falls, and the charge in the barrel (*c*) is exploded, thus giving the alarm. There are also more complicated arrangements than this, by which several successive shots are fired, but we do not find them

reliable, and we consider the alarm gun figured on page 512 as good a thing of its kind as can be made. The inventor is Mr. W. E. Wigg, of Barnsby Foundry, Beccles, who supplies them, we believe, at 5s. 6d. each, at which we consider them very cheap.

CHAPTER XLIX. — FOX PRESERVATION AND THE FORMATION OF FOX COVERTS.

IN a former chapter we detailed the means necessary for the decrease of foxes in game preserves, and promised then to devote an equal amount of attention to the best means of maintaining and increasing the stock of foxes in hunting countries; for although the fox is, from one point of view, decidedly vermin, it is nevertheless from another decidedly game. We now propose to fulfil our promise.

There are several causes which contribute to the numerical decrease of foxes in different parts of the country. It is generally brought about by waste of foxes to gratify the vanity of hunting men and women, who must carry home and hang up in their halls a head or a brush or a pad as a proof of their prowess, and is also due to the enemies of hunting more than to game preservers proper. Since it has become the fashion to decry fox-hunting as a luxury of the grinding landlords, discontented men have taken to the practice of destroying all objects of sport, from the fox to the coney, and as they think they have more reason

for doing away with foxes, these have accordingly suffered most. At the hands of gamekeepers foxes are but too likely to receive the *quietus*, but often against the instructions of their masters. Wherever it is sought to maintain hares, partridges, and pheasants in fox-hunting localities, it must be recognised that the first-named will receive a deal of injury from the varmints, unless the ubiquitous rabbit be encouraged and held in good numerical strength. It may be regarded as an axiom that, when foxes can obtain rabbits, they are content to stick to them. Kill off the rabbits, and they must go to the game for their livelihood, or else eke out a precarious existence by depending upon raids on the poultry-house, which is not quite what the fox considers agreeable.

We see no reason for excluding a fair supply of foxes even from the most closely-preserved districts, but we do see every reason why the game preserver should take action when he is pestered with too many of the varmints in his preserves. We would recommend moderation on both sides. With that the decrease of the fox in hunting countries need never be brought about by the trapping of game preservers. To other methods no sportsman or gentleman would consent. Poisoning foxes is the accomplishment of an Irish rabble.

Waste of foxes in hunting becomes yearly greater, and the causes which contribute to this are various. As we have said, vanity has doubtless a good deal to do with it; but a fair increase of foxes is often prevented by late hunting, which destroys a much larger percentage of vixens at a period near breeding time than hunting economy can

tolerate. So long as fox-hunting is protracted to so late a period as the bagging of a May fox requires, so long must foxes remain more or less scarce in such districts.

Then, again, the damage to the farmers' stock is also frequently brought forward as a reason for their being destroyed, and no doubt a considerable number yearly fall victims to the farmers' wiles on this account, but the depredations of the varmint amongst poultry and lambs are obviously very often and very much exaggerated. As we said, whenever rabbits are plentiful and easily obtainable, the fox will rarely destroy other animals or birds, except occasionally, when probably the poultry-house will suffer. In the spring of the year, report says—more often wrongly than rightly, we fancy—that foxes are most destructive to lambs. This we much doubt, and although conceding that once in a way a tender and sleek-looking lamb may be abstracted from the field, still we adhere to the opinion that of the lambs killed and left partly eaten, the mischief, nine times out of ten, may be laid, without fear of error, to the credit of dogs. The only time when foxes touch the lambs is when the cubs are littered; in such case the vixen, we may suppose, requires the nutritious flesh they supply. Again, when the cubs are large enough to play and air themselves in the sun, they are sometimes supplied with a lamb at which to tear with their milk teeth, and in the skin of which they find great inducements towards play. But systematic robbery of lambs by foxes is, in our opinion, the exception rather than the rule. Hence we look upon fox destruction by farmers as unnecessary.

The first requisite in fox preservation is to know something of the habits of the animal itself. A good deal of information relating to the varmint from the game preserver's point of view will be found in a previous chapter, but we propose here to some extent to supplement that.

Some affirm the existence of three varieties of the fox in Britain, commonly denominated the "greyhound fox," the "cur fox," and the "mastiff fox." These names are devoid of meaning, for such "varieties" do not exist, but are nothing more than modifications in the build and characteristics of the foxes inhabiting differently featured districts, and the result of variation in climate and locality.

Some foxes are taller and more gaunt than usual, and these may be dubbed greyhound foxes; others, again, of large build, stout, and cobby, are in the nature of a mastiff fox; while the "curs" are represented by the smaller members of the vulpine race, which may be a variety, inasmuch as the tip of the tail is always black. The first of these is probably most often noticed, and is asserted to occur in any mountainous districts of the country likely to originate and necessitate the agility of frame which must characterise this kind of fox. The cur fox is the one best known, and the most pernicious varmint of the three—"approaches nearer to the habitations of mankind, lurks about the outhouses of the farmer, and destroys all the poultry it can get at."

Various distinctions are made between individual foxes. Thus we hear of grey and red, not to mention what is occasionally described as a "great blue fox"—rather a startling colour for Reynard, if we may accept this de-

scription as correct. However, in spite of these decidedly phenomenal colours, there is but one kind of fox, and although they vary to a certain extent, the differences in colour never run to red or blue.

A full-grown fox has for its chief colour a reddish fawn, which covers the upper and outer parts of most of the body, becoming brighter in colour towards the brush, over the hind legs, and being what is termed "flecked" with white, that is, white for about an eighth of an inch towards the middle, nearer the surface than otherwise, and by the skin the fur is woolly and of a very dark grey; a band of very light grey forms the boundary to the fawn, and on the sides of the neck and close behind the shoulders is nearly white. The under part is of dark grey. The brush in most cases partakes of the tints predominating over the body, while the finer and longer hairs are tipped with black. The hair upon the extremity of the brush is white. A reddish shade of fawn passes down the upper side of it from the back, and loses itself about three-fourths down the tail. The ears and pads are nearly black, the shade of fawn appearing in certain lights. In young foxes not fully grown the colour is reddish fawn upon the upper parts, but is "flecked" with white throughout, while the "flecking" disappears as the varmint becomes older, and in aged specimens gives place to a dullish grey colour, mingled with the fawn.

The length of a full-grown fox is generally computed at 2½ft., exclusive of the brush; this is not an average size, and our experience is that 2ft. 9in. is nearer the mark, while we have killed many larger. The brush varies con-

siderably from 1ft. to 1ft. 6in. The height at the shoulder is about 1ft.

The fur becomes thicker and longer in winter, and it is partly shed in the spring. The best skins are obtained towards the end of November, at which time the colouring is in some specimens very beautiful. The preponderance, perhaps, of one colour over another in certain foxes is, no doubt, the real cause of their being called "blue" or red; thus a young fox might be described as of the latter colour, while a rare old stager may have acquired, as the result of old age and the vicissitudes of life, a certain reverend greyness warranting his being termed "blue."

The fox of the hunting counties is very different in its habits from those in the few portions of the kingdom which, either through their inaccessibility to, or absence of, fox-hounds, remain practically unhunted. The former, except when the dread time comes round, leads a very easy and comfortable life, and has generally a good covert, where food is always plentiful and easily obtained, and where there is but little to disturb or alarm it. In districts where no hounds come, or only put in an appearance once or twice a year, foxes rarely maintain any earth of large size and offering comparative security, but trust entirely for safety, in case of need, to the holt where the cubs are born. In winter, however, when snow is on the ground and frost prevails, the fox is compelled to seek warmth and protection from the cold in such underground retreats as it may have constructed or can find. The earth of the fox shows no great strategical value when opened up, and tends invariably towards the completion of a rough circle of tunnels, between the sides

of which and the entrances various other passages are formed in irregular directions. There is always more than one place of ingress, and sometimes as many as five or six, or even more. Freedom from damp is also a rather important consideration, and although the holt is often chosen near wet ground, or adjacent to a ditch or small watercourse, due care is always taken that no water or damp can penetrate the earth and cause discomfort to the inhabitant.

The nest, or rather holt within which the nest is formed, and where the young are brought forth, is generally apart from the usual earth, and is occasionally formed especially for the use to which it is put. In such case seclusion and safety are apparently the most eligible features of the spot chosen, while warmth and dryness are also considerations of some importance. These cubbing earths are rarely of great extent, except sometimes when a rabbit burrow is enlarged in order to form them with least possible trouble; while a level sunny place just without the holt, whereon the young and lively cubs may disport themselves, is generally included in the arrangements.

To this burrow the female resorts some two or three weeks before littering, and prepares a sort of nest or bed for the reception of the cubs, composed of dry leaves, grass, bracken, and such other materials as may be obtainable. The nest, however, is in no way noticeable, and sometimes is no more than an apology for one. The young are produced about April, nearer the beginning than the end of the month; and remarkably queer little creatures they are when first presented, and during earlier life. If one were to form an opinion, according to popular notions, as to

what animal they least resemble, one would most probably say a fox; for their whole appearance, combined with the growling they make and the amount of inside mouth shown when anyone interferes with them, is more like the bear than anything else. They are very slow of growth, and sometimes far exceed eighteen months before attaining their real size and becoming "full grown." When taken quite young, and if they be carefully reared, the cubs become very tame, and individual foxes forget their natural state, or have no instinctive craving for it, and may be trusted to roam about loose. We had one for some time, a great favourite with younger members of the household, besides being of considerable use in killing rats occasionally, and, moreover, pigeons continually, until these latter learnt the length of "Charlie's" tether. When found he could not have been a fortnight old. It is, however, necessary to observe great caution with regard to giving such foxes their liberty, for if they should take to their natural life, once having effected their escape, they are several times more destructive and audacious than others.

A few days before the bitch litters, and also immediately after, the dog fox makes it his business to provide her with food, and if we may judge from the quantity of provender which is brought together for her proper sustenance, she must indeed be possessed of a ravenous appetite. However, the fox, like most other vermin, is, as far as food is concerned, always providing for the proverbial rainy day, and, comparatively speaking, is very nearly as wasteful and destructive in the amount it kills as the stoat or polecat.

A peculiarity is the persistence with which the habit of burying its food sticks to the fox, and when we have had foxes, caught wild and full grown, confined for a week or so, having thrown them in a dead rabbit for food, if we returned in five minutes, the coney was always buried in a corner, and any tame fox showed the same characteristic. What the object could be we do not know, and probably the animals bury for no other reason than that their instinct prompts them to do so. In a wild state they nine times out of ten never return to obtain prey that they may have buried, and we have over and over again seen traps set, and set them ourselves, all round rabbits which have been known thus concealed, and have never caught a fox, or seen one captured under these particular circumstances.

The different times of day, and night also, when the fox sallies forth from its place of concealment, vary a good deal according to weather, season, and locality as well as the inclinations of the nimble little animals which may form its favourite food. In the early months of the year, when the rabbits keep pretty much below ground, and when birds and food in general are scarce, the "varmint with a brush" takes a round in all seriousness early in the morning, as soon as the darkness of night commences to disappear, and searches for food as long as may be expedient to attain sufficient, or until its operations are likely to be disturbed; and although it may continue at intervals during the day to make short hunts and move about a little in pursuit, within the shelter of the covert, it will not again leave the near neighbourhood of its lair until the short day of the early year draws to a close, when it again sets forth

with marauding intent, until prepared for sleep, which it mostly takes at this season during the night. When, as the year progresses, cubs are produced, the fox has at first to make great exertions in the day to supply a sufficiency of food, and should the weather be either very rough or very cold, he will find considerable difficulty in obtaining it; in such cases perhaps one, two, or even three lambs will be abstracted from their folds and carried off to the earth for the cubs, at intervals of three or four days, but rarely in succession.

At a later season, with an improvement in the weather, the fox is no longer obliged to obtain the same amount of food, and, as the days become longer and finer, the rabbits, mostly young ones, come out more thickly morning and night, and are more easily caught. As the summer draws on the fox commences to have almost his own way, and is never troubled as to means for subsistence, food being in plenty, within his reach, and very easily obtained right through the season until the warm days of autumn draw on. As soon as frost becomes frequent, he has again to bring his wits to bear in acquiring a sufficiency, and when winter comes, and with it its accompanying cold and snow, sometimes he goes for some days without a really "square" meal; if this paucity of food and difficulty in obtaining it continue, then Reynard makes a swoop upon the poultry, with what result many know too well. The distance a hungry fox will travel in quest of food of its usual kind is sometimes very great, and we have tracked their footsteps round and round and across large fields, one after another, and still, to the best of

our belief, been no nearer the fox than when first we hit off its track.

This varmint has a peculiar aversion to rain, and in wet weather will lie remarkably close, rarely leaving the shelter of its earth or lair, except to obtain such food as may be absolutely necessary. A fox caught after a week's rain shows unmistakable signs of privation. Why this should be is not at all evident, as the rain or wet cannot particularly influence the scent of the birds and animals which form its food; nor does it appear why damp weather should be so extremely distasteful to the fox.

The powerful odour which always envelops the fox whilst alive, and which clings to its skin to some extent when dead, is the result of a secretion in glands situated near the root of the tail, very similar to those in the stoat and fitch and their like, with the exception that in this instance the odour is more lasting, and clings with tenacity to any object which may be brought in contact with it, yet it has by no means that disgusting fœtor characterising the secretion in the foumart.

Disease of any kind is not often noticed as occurring in the fox, nor does it appear to be of any varied type; although, no doubt, inclemencies of weather and the quality and quantity of its food will affect it in the same way as dogs in like circumstances. The worst disease attacking the fox is mange, which sometimes assumes a most virulent type, and causes death; whether it be generated solely by, and confined to, the particular animal afflicted, or whether acquired from intercourse with others, is not yet apparent, but in all probability it is the result of a consumption of

carrion and other things unpalatable and innutritious to the fox.

When the mating season occurs, the foxes what is commonly termed "run," that is to say, become uncommonly restless, and often continue on the move for several days, travelling sometimes to a considerable distance from the locality in which they lie. In such cases a dog and bitch generally "run" in company. This is also termed "clicketing" and "going to clicket."

Some discussion has taken place upon the question whether the fox and dog will breed together, and many such experiments have been made; and, although many assert that they have succeeded in producing hybrids, others deny the possibility. But that it is possible is certain, as, for instance, when a bitch is tied up in a fox covert.

Having now obtained some information on one or two points of fox life, we can proceed to the consideration of their preservation. First, then, as to the introduction of foxes. Obviously all countries cannot be fox-hunting countries—for various reasons, the most patent of which will probably be the unsuitability of the locality to the natural habits of the fox. Under such circumstances it is useless attempting the introduction of the wily one with a view to the maintenance of a head of foxes. But if the locality be suitable and foxes have been plentiful before and have died out or been killed down completely, it is a comparatively easy matter to reintroduce the animal. If possible, about the month of March or April some young vixens in whelp should be purchased and turned down

near each other in a well-fenced covert where undergrowth is thick and rabbits and rabbit-burrows are plentiful. If a happy moment have been chosen, the vixens will immediately commence to cast about for cubbing-earths, and, if none be available, will soon turn some sufficiently capacious rabbit-burrows to account and lay up their cubs in them, after which they must be watched and well supplied with food, for, be it remembered, the chief provider—the dog fox—is absent. By the following season the existence of the vixens and their offspring will be well known, and, by a judicious care of the varmints, a good head of foxes will soon be established.

The next point, and it is an extremely important one, is the protection of the foxes from their human enemies other than hunting-men; for, as we said before, it has become largely the practice to destroy foxes merely because they are so, and not by reason of any specific damage they may happen to commit. Our own opinion is that the fox is undoubtedly of the type of vermin as far as the game preserver is concerned, but that nevertheless hunting and game preserving can be worked together if either be conducted upon rational principles.

The chief remedy for vulpicide lies in a cordial understanding by both parties not to interfere with each other's sport more than is absolutely necessary. But it is the dependents who are mostly to blame, and chiefly the gamekeepers. Cases of vulpicide should be dealt with severely, that is, of course, when the keeper contravenes his master's orders. The "rabbit perquisite" is an unmixed evil, and is the prime motive of a good deal of fox-killing.

The game preserver who holds rabbits fairly plentiful in his coverts need never fear much depredation among his pheasants and partridges by foxes. Consequently, the more plentiful small sporting-warrens and gorse-coverts for rabbits become, the less damage to game.

The ill-will existing in many parts between farmers and fox-hunters, and its consequent attendant amount of vulpicide, might easily be remedied were more consideration shown towards the farmers and their property. Care for growing crops, fences, and stock, and a fair compensation for all damage done, would soon pay for itself in many localities by the increase in foxes.

Fox coverts may be of two kinds, either as a preserve or as a place where increased facilities are offered for breeding. Of the former we need say little, because any ordinary rough covert will prove applicable to foxes; but we may with advantage state that the general idea of what is agreeable to them is somewhat erroneous. Although foxes like a thick, rough, miscellaneous growth about their haunt, they above all things like to "run free." Woods and plantations possessing thick close-growing bottoms of furze and the rest, foxes do not like. They are not of the same nature as a rabbit spaniel, which delights in pushing here, there, and everywhere through an almost impassable growth; on the contrary, foxes prefer to see their way well before them, and run "free" without being hindered by furze and bramble and other low, thick-growing and tough brake. On the question of water, too, they have their likes and dislikes. They greatly prefer coverts with ditches or streams running through them, but they unmis-

takably dislike wet places, and if the wood or brake it is sought to encourage them in be at all damp or redolent of stagnant water, they will have nothing to do with it as a haunt. Rocky and stony places seem to please only individuals; indeed, the animal in question is very peculiar upon this point. We happen to lease some coverts fairly well sprinkled with foxes, and these coverts are for the most part level and free of rocks; but there is one particularly rough, wild, and broken, quite impassable without extreme trouble and risk, and yet this is the only part the foxes do not frequent. Were we ignorant of this peculiarity, we should expect the few acres of that broken ground to be more foxy than all the rest of the estate together.

It will thus be seen that foxes are somewhat erratic in their choice of haunts; consequently all coverts cannot necessarily be fox-coverts, or, in other words, will scarcely suit for fox preserving. Whenever it is necessary to produce any large increase of the animals, the best plan undoubtedly is to form a regular and well-defined fox preserve, and although this will necessitate some expenditure and trouble, in the end we fancy it would be found the most speedy and the cheapest manner of going to work.

The first thing to decide upon is the land; this, if possible, should be a few acres of sandy covert, the growth upon which is irregular and recent. In a suitable part of this either an artificial earth must be constructed, or an inducement offered the varmints to make one themselves. A large collection of old tree-roots of moderate, not unwieldy size, brambles and bush roots, faggots of rough plantation cuttings, and similar material should be made. The site

chosen, if possible, should be on a gentle slope, so as to drain freely. The next step is to mark out a rough area of some fifteen feet square, and remove the soil from this to the depth of about one foot all over, heaping it up round the sides. Then a piece of pole about nine inches in diameter and a few feet long must be obtained. These materials all at hand, the work of building the earth is commenced. First of all, a few of the tree-roots are drawn together in the middle, and placed in such position as to form with the ground two or three passages diverging from a common centre, of sufficient size to admit of foxes passing about freely and lying up in them. After having filled up the interstices on the surface with faggots, briar roots, &c., the process of covering all in with soil may be proceeded with. By using the pole referred to before, various passages towards this may be formed, the earth, roots, &c., being piled up about the pole, and pressed down in such a manner that when the latter is withdrawn a hole remains. Being on a slope, the earth may be so formed as to have the portion intended for the main chamber at the highest point. It is not a bad plan to dig out a ditch about two feet deep and three feet wide at the extemity of one or two of the entrances, so that the latter are entered from the ditch. The entrances must be carefully formed, and not exceed 9in. high by 6in. wide. It may be found necessary to build in a portion of the holes about two feet from each exit of this particular size, otherwise dogs will be able to get in easily. At Fig. 44 we give a plan of an actual earth of this kind, made on a piece of land between two dry ditches, or, rather, what are disused leats formerly taking

water to a mine. This will serve as a guide to anyone making an artificial earth in this manner. If it be at all desired to maintain the foxes within certain prescribed limits, it is a matter of necessity that they be watched, and kept unmolested, and as idle as possible, by providing them with plenty of food.

Cubs must be obtained—see that it is from a trustworthy source — and put into the earth, and if necessary, they

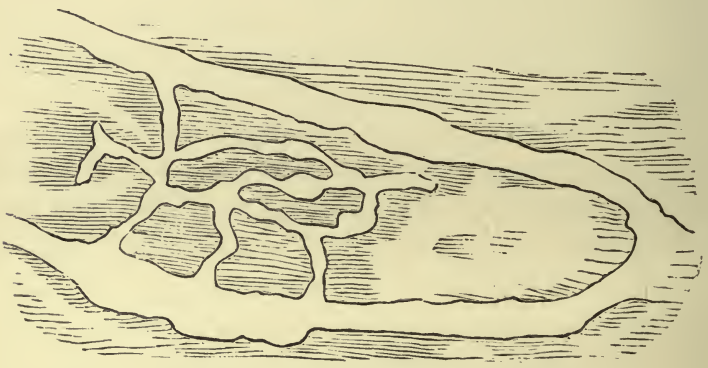


FIG. 44.—PLAN OF FOX'S EARTH.

should be continually scurried back into its fastnesses if they incline to wander. Owing in all probability to certain defects of the site and surroundings, it may be found necessary to put up wire fencing round an acre or two of the land; but a well-formed and well-looked-after gorse covert and earth is decidedly preferable.

For a good gorse covert for foxes there is no better site than a small pasture field surrounded on three or all sides by covert. An acre or two square in the centre of this

must be ploughed up, and all but about fifteen yards square in the centre well planted with gorse and broom, and any small hedge shrubs obtainable. About two yards from the limit of the gorse, in the centre square, a ditch about eighteen inches or two feet deep should be dug out in an irregular circle, and a fair network of fox-spouts or burrows be dug out in the within contained space, the spouts about twelve inches by six inches. These should be fairly closely covered in with any rough materials which will keep soil out of them. In the centre the runs should converge to a chamber or two, these being covered by big tree-roots and the like piled in dome form. Afterwards, the whole affair should be covered up with any material, and be finally finished off with gravelly soil, some one or two downward passages being left; and, finally, gorse, broom and briar seed may be scattered about. This earth and gorse covert combined will give as fine a fox-preserve as one can need, and, if it be only managed with a fair amount of care and consideration, must prove a very productive nursery.

Carefully-built regularly-formed artificial earths we never found of much worth. As rearing-places for cubs they are passably satisfactory, but not as real places for breeding and maintaining a head of foxes in. Fox-courts are of equally little practical value, and very unremunerative concerns. The great secret of maintaining the varmints is to leave them unmolested, and provide them with plenty of rabbits about their earths.

It may be as well to say a word or two about the traffic in foxes. It is nefariously engaged in as largely as the traffic in game eggs. No one ought to obtain foxes, either

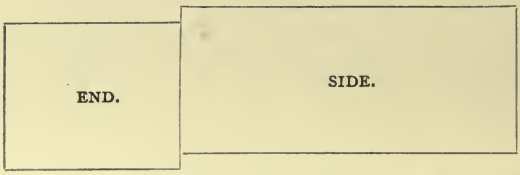
as cubs or full grown, from any but responsible persons, and with the knowledge of the master of the country from which they are drawn, if it be hunted. Foreign foxes are not worth much for hunting purposes. We must look to Scotland for a supply of good class animals if we want them.

CHAPTER L.—SENDING GAME TO MARKET.

MOST preserves are maintained, with a view to being self-supporting, by means of sending surplus game to market. As to the price it realises, a good deal depends upon the way it is packed and delivered, and it is very important that packing and similar matters should be carefully attended to. Everyone would sooner give a shilling or so more for a nice, clean pheasant, than for one bedraggled with clotted blood and of uneven feather, and when this shilling is lost on several thousand birds every season the loss becomes material.

When packing, two ends must be held in view—viz., first, to prevent the package from being opened and its contents appropriated in transit, and next, to insure clean and neat delivery of the game. For feathered game, boxes are for both purposes nearly a *sine quâ non*, and much to be preferred to hampers, although hampers admit of birds being longer on the way. For small lots of game—from two to ten brace—the safest kind of box is one in which the sides are nailed on to the ends, as shown on the next page.

By this means every piece can be fastened by nails having a hold on different sides at right angles to one another, and it is quite impossible to open such a box without entirely destroying it, more especially if it be coopered round at each end with hoop-iron. One of this kind, made of ⅝in. deal, of 9in. width, and 1ft. length, will hold four grouse, including the necessary packing. Of course, larger ones can be made to hold more birds at the same rate. If the boxes have to be used several times over, it is necessary that they should be strongly made, and have a hinged lid closed by a padlock. In addition, they should have a string or wire stretched right round in a groove



cut for the purpose, and the ends sealed down into a centre-bit hole. They should have large holes bored on all sides, so as to admit air freely.

It is, however, rather the mode in which the game is packed than the kind of box that regulates the condition in which it arrives. Every bird should be quite free of moisture and be cold; each should have a mixture of nine parts powdered charcoal and one part black pepper dusted in, especially under the wings, beneath the legs, round the vent, and into the beak, as well as on any gunshot wounds. The best packing we know of is spruce fir broken small. It keeps the birds sweet, and does not

allow them to shake, while at the same time permitting a very free draught of air. We never thought well of hops or paper. The spruce failing, heather, wheaten straw, or broom may be substituted. Boxes made with partitions are often used, but, as each bird requires some packing in these, the divisions seem superfluous. In large boxes or hampers, small laths to separate each layer of birds may be advantageously employed. Furred game are best sent in hampers, strung together in couples, and slung over small sticks passed through the hamper. It is necessary that the game be paunched and left to hang sufficiently long to get thoroughly cool and stiff. If the hampers be found to be turned upside down in the transit, some wire or twine nooses fixed in the bottom may be found useful to keep the contents straight. Both hares and rabbits, it is almost needless to add, gain greatly in appearance by careful packing.

Besides these matters, there are many other little duties of the gamekeeper too numerous to specify, much less to detail, but which must be ascertained from personal experience. The business of game preserving is one beset with difficulties—some serious—most of them verging on the trivial, but which, nevertheless, have to be met ; and in this respect does the good game preserver exhibit his superiority over another possessed of less invention or less capability.

Every day will bring forth some new experience, and the experience suggest some new "wrinkle," some special expedient for extrication from a dilemma, some new mode of meeting a difficulty.

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To assist game preservers in the more important parts of their business has been our aim; and if we have accomplished anything in this direction, they must forgive us the suggestion that they use their own judgment in dealing with minor matters.

APPENDIX.

APPENDIX.

THE GAME LAWS OF GREAT BRITAIN.

GAME PRESERVING, it is well understood, can only be conducted agreeably to various laws enacted to control it, and dealing in game is similarly regulated. Some notice of these, and of the spirit in which they are interpreted, are proper to the present work. We cannot pretend to offer exhaustive information on the subject, but without touching upon the Acts relating to trespass pure and simple, we will endeavour, in as concise a form as possible, to furnish a statement of those immediately relating to game, and hence enlighten our readers as to their legal position as game preservers.

In the following table are shown all the Game Acts of the British Isles, both those which are general and those which apply to particular portions of the Kingdom:

GAME ACTS APPLYING TO THE UNITED KINGDOM GENERALLY.

(1.) Night Poaching Acts	9 Geo. IV., c. 69. 7 & 8 Vict., c. 29.
(2.) Act Permitting Killing of Hares	11 & 12 „ c. 29.
(3.) Game Licence Act	23 & 24 „ c. 90.

(4.) Poaching Prevention Act	25 & 26 Vict., c. 114.*
(5.) Poisoned Grain Prohibition Act	26 & 27 ,, c. 113.
(6.) Ditto Flesh ditto	27 & 28 ,, c. 115.
(7.) Gun Licence Act	33 & 34 ,, c. 57.
(8.) Wild Birds Protection Act (1880) ..	43 & 44 ,, c. 35.
(9.) Ground Game Act	43 & 44 ,, c. 47.

GAME ACT APPLYING TO ENGLAND AND WALES.

(10.) The English Game Act..	1 & 2 Will. IV., c. 32.

GAME ACTS APPLYING TO SCOTLAND.

(11.) Act Qualifying Persons to Kill Game	1621, c. 31.
(12.) Close Times	1707, c. 13. 13 Geo. III., c. 54.
(13.) Scotch Game Act	2 & 3 Will. IV., c. 68.

GAME ACTS APPLYING TO IRELAND.

(14.) Act Qualifying Persons to Kill Game, &c...	10 Will. III., c. 8.
(15.) Close Times	37 Geo. III., c. 21. 26 Vict., c. 19. 28 & 29 Vict., c. 24. 37 Vict., c. 11. 42 & 43 Vict., c. 23.
(16.) Game Trespass Act	27 Geo. III., c. 35.
(17.) Game Licence Act	5 & 6 Vict., c. 81.
(18.) Poaching Prevention Act	23 & 24 Vict., c. 113, s. 43.

Before going further, it is necessary to state what constitutes "game" under the above Acts; for, although sportsmen have determined the point by their unwritten laws, still the law of the land has a way of its own and determines "game" to be as under, although, as we shall presently show, this list is not strictly adhered to, some Acts regarding as game what others do not recognise or specify as such.

In the following table Scotland seems to have a pre-

* By 38 & 39 Vict., c. 47, it is enacted that no constable appointed under Scotch Acts 1617, 1633, 1661, shall exercise powers of constables and peace officers under 25 & 26 Vict., c. 114.

ponderance of game birds over England, and Ireland again over both. It will be seen, however, that the animals and birds are in most cases the same, although under different names.

ANIMALS AND BIRDS WHICH ARE GAME ACCORDING TO LAW.

ENGLAND.	SCOTLAND.	IRELAND.
Hare.	Hare.	Hare. Deer.
Pheasant.	Pheasant.	Pheasant. Quail.
Partridge.	Partridge.	Partridge. Grouse.
Grouse.	Grouse.	Ptarmigan. Bustard.
Black-game.	Black-game.	Landrail. Snipe.
Heath-fowl or Moor Game.	Heath-fowl or Moor-game.	Woodcock. Teal.
Bustard.	Ptarmigan.	Wild-duck. Widgeon.
	Bustard. (Capercailzie.)*	Black-game.
		Heath-game or Moor-game.

As we said, some statutes regard particular animals and birds as game which are not so held by others. This is most noticeable in regard to the English Game Act and the Revenue Acts, which in England protect woodcock, snipe, wild-duck, teal, widgeon, quails, landrail, rabbits and swan eggs. In Scotland they affect snipe, woodcock, wild-duck, quails, landrail, rabbits, deer, and roe deer. In Ireland, deer, the eggs of partridges, pheasants, grouse, moor-game, wild-fowl, quails, landrail, house-doves, house-pigeons, and rabbits.

With regard to foreign game, or game from other parts of the country comprised in our denomination of game, some difference of opinion exists, but there is little doubt that they come within the limits of our law.

* The capercailzie, be it noted, is not *legally* a game-bird, although universally regarded as such.

TABLE SHOWING THE CLOSE TIMES FOR GAME IN THE BRITISH ISLES.

	ENGLAND.		SCOTLAND.		IRELAND.	
	Begins	*Ends*	*Begins*	*Ends*	*Begins*	*Ends*
Black-game ..	Dec. 10	Aug. 20*	Dec. 10	Aug. 20	Dec. 10	Aug. 20
Bustard	Mar. 1	Sept. 1	—	—	Jan. 10	Sept. 1
Grouse (Red)	Dec. 10	Aug. 12	Dec. 10	Aug. 12	Dec. 10	Aug. 12
Landrail†	Mar. 15	Aug. 1	Mar. 15	Aug. 1	Jan. 10	Sept. 20
Partridge	Feb. 1	Sept. 1	Feb. 1	Sept. 1	Feb. 1	Sept. 1
Pheasant	Feb. 1	Oct. 1	Feb. 1	Oct. 1	Feb. 1	Oct. 1
Ptarmigan ..	—	—	Dec. 10	Aug. 12	Dec. 10	Aug. 20
Quail†	Mar. 15	Aug. 1	Mar. 15	Aug. 1	Jan. 10	Sept. 20
Wild-fowl, and Birds not Game†	Mar. 1	Aug. 1	Mar. 1	Aug. 1	Mar. 1	Aug. 1
Hare.....	—	—	—	—	April 20	Aug. 20

We now give, in as concise a form as possible, the terms of the Acts as named in our first table:

GAME ACTS APPLYING TO THE UNITED KINGDOM GENERALLY.

(1.) THE NIGHT POACHING ACT (9 Geo. IV., c. 49).

Section 1 repeals 57 Geo. III., c. 29, except so far as the same repeals any other Acts, and enacts that any person who may unlawfully take or kill game by night shall, for the first offence, be imprisoned for not exceeding three calendar months, with hard labour, and at expiration of such term shall find surety, himself in £10 and other surety for £10, not to offend within one year, failing which the imprisonment to extend to six months, unless the sureties be sooner found. For the second offence, six months and double sureties; and for the third offence, not exceeding two years' penal servitude.

Section 2.—Owners or occupiers of land, lords of manors or their servants, are permitted to apprehend offenders, and carry them before two justices of the peace. Offenders assaulting or offering violence towards any person hereby authorised to apprehend them are guilty of a misdemeanour, and subject themselves to a penalty of two years' imprisonment, in addition to any incurred under Section 1.

Sections 3, 4 and 5 give power for the issue of warrants for apprehension of

* Dec. 10 to Sept. 1 in New Forest, Devon and Somerset.
† *Vide* Wild Birds Protection Act, p. 548.

offenders, limit the time for commencing proceedings, and give the form of conviction.

Sections 6, 7 and 8 give power of appeal against summary conviction, enact that no conviction or adjudication made on appeal shall be quashed for want of form, and that convictions be returned for registration, and may be given in evidence.

Section 9.—Persons, to the number of three or more, entering any land for the purpose of taking or destroying game, &c., shall be held guilty of a misdemeanour.

Sections 10 and 11 enact certain rules of judicial procedure for Scotland.

Note.—This Act applies also to Scotland and Ireland.

(2.) Act Permitting the Killing of Hares (11 & 12 Vict., c. 29).

Section 1 enacts that it shall be lawful for persons in the occupation of any inclosed lands, or for the owner thereof who has the right of killing game thereon, by himself or by any person authorised by him according to the form in the schedule at foot, or according to one of like effect, to take, kill or destroy hares being upon such land, without a licence to kill game.

Section 2.—No owner or occupier to have power to give authority to more than one person at the same time, in any one parish, and such authority or a copy thereof to be sent to the clerk of the magistrates acting for the petty sessions division within which the said lands are situate.

Section 3.—No person so authorised to kill any hare as aforesaid shall, unless otherwise chargeable, be liable to any duties of assessed taxes as a gamekeeper.

Section 4 permits the coursing or hunting of hares without a game licence.

Section 5 debars the laying of poison or the use of firearms by night, for the purpose of killing hares or other game.

Section 6.—This Act not to affect any agreements reserving game.

Sections 7, 8 and 9 are unimportant.

Schedule.

I, A B, do authorise C D to kill hares on my lands (*or* the lands occupied by me, *as the case may be*), within the ——— of ——— (*here insert the name of the parish or other place, as the case may be*).

Dated this ——— day of ——— (*here insert the day, month, and year*).

(Witness) A B.

(3.) The Game Licence Act (23 & 24 Vict., c. 90).

Section 1 repeals old Acts relating to gun licences, &c.

Section 2.—In lieu of the old duties repealed, the following duties are to be levied :

For a licence in Great Britain, or a certificate in Ireland, to be taken out by every person who shall use any dog, gun, net, or other engine, for the purpose of taking or killing any game whatever, or any woodcock, snipe, quail or landrail, or any coneys, or any deer, or shall take or kill by any means whatever, or shall assist in any manner in the taking or killing by any means whatever, of any game or any woodcock, snipe, quail or landrail, or any coney, or any deer—

(*a.*) If from between 5th April and 1st November, to next 5th April £3 0 0
(*b.*) If after 5th April to next 31st October.. .. .. £2 0 0
(*c.*) If after 1st November to next 5th April £2 0 0
(*d.*) Any person having the right to kill game may take out a licence for any servant to be assessed as game-keeper for £2 0 0
(*e.*) Licence to deal in game £2 0 0

Section 3.—The Commissioners of Inland Revenue to have management of the duties granted under this Act.

Section 4.—Persons must take out a licence to take or kill game before so doing, otherwise they become liable to a penalty of £20.

Section 5 excepts and exempts the following from the provisions of this Act:

Exceptions.

1. The taking of woodcocks and snipes with nets or springes in Great Britain.
2. The taking or destroying of coneys in Great Britain by the proprietor of any warren or any inclosed ground whatever, or by the tenant of lands, either by himself or by his direction or permission.
3. The pursuing and killing of hares respectively by coursing or hunting.
4. Deer hunting.
5. The taking and killing of deer in any inclosed lands by the owner or occupier of such, or by his direction or permission.

Exemptions.

1. Any of the Royal Family.
2. H. M. gamekeepers.
3. Persons aiding or assisting those duly licensed to kill game.
4. Persons taking or killing hares under 11 and 12 Vict., c. 29 (the Act Permitting Killing of Hares), and 43 and 44 Vict., c. 47 (the Ground Game Act).

Section 6.—Nothing contained in this Act to repeal, alter or affect 11 & 12 Vict., c. 29, 30, except that the term "game certificate" used in them and 1 & 2 Will. IV., c. 32, shall be construed to mean a licence to kill game.

Section 7 permits licences to be taken out on behalf of assessed servants, acting as gamekeepers for persons having right to kill game, or under deputations from lords of manors.

Section 8 permits licences for gamekeepers to be transferred from one keeper to his successor.

Section 9.—But such licences only to be available within the limits of the manor or lands for which the person may be appointed gamekeeper.

Section 10.—Persons doing any act requiring them to possess a licence to kill game must produce the same or give their names and addresses when demanded by any officer of Inland Revenue, any lord of the manor, or his gamekeeper, by any person holding a licence to kill game under this Act, or by the owner, landlord, lessee or occupier of the land on which such person may then be; and, in the event of any refusal so to do, or if any false or fictitious licence or name and place of residence be given, the person so offending is subject to a penalty of £20.

Section 11.—Licence to be null and void if the holder be convicted of any offence under the English Game Act (1 & 2 Will. IV., c. 32) or the Scotch Game Act (2 & 3 Will. IV., c. 68).

Section 12.—The Commissioners of Inland Revenue to publish a list of persons licensed to kill game.

Section 13.—The provisions of 1 & 2 Will. IV., c. 32, and 2 & 3 Vict., c. 35 (otherwise repealed), relating to licences to deal in game, to be in force throughout the United Kingdom, and no person to sell game to a licensed dealer without first taking out a £3 licence [(*a*) on page 544].

Section 14.—Persons duly licensed to deal in game to obtain and pay for a licence under this Act.

Section 15.—No licence to deal in game shall be granted to any person, except he produce a licence for the like purpose granted by the justices; and a list of persons licensed to be kept for inspection.

Section 16 cites by whom licences to take, kill and deal in game shall be granted, and the form thereof.

Section 17 relates only to Ireland, which see, p. 560.

Section 18.—Licences to kill game to be available anywhere in the United Kingdom, irrespective of where they were taken out, subject of course to the law of trespass—gamekeepers' licences always excepted.

Section 19 repeals 7 & 8 Geo. IV., c. 49.

(4.) The Poaching Prevention Act (25 & 26 Vict., c. 114).

Section 1.—"The word 'game' in this Act shall, for all the purposes of this Act, be deemed to include any one or more hares, pheasants, partridges, eggs of pheasants and partridges, woodcocks, snipes, rabbits, grouse, black or moor game, and eggs of grouse, black or moor game." Defines the words "justice" and "justices."

Section 2 empowers any constable in any highway, street or public place to

search any person whom he may have good cause to suspect of coming from any land where he shall have been unlawfully in search or pursuit of game, or any person aiding or abetting such person and having in his possession any game unlawfully obtained, or any gun, or part of gun, or nets or engines used for killing or taking game, and also to stop any cart or other conveyance suspected of containing game. And should any of the above-mentioned articles be found upon such person, cart or conveyance, the constable may seize and detain them, and apply for a summons against the offending person or persons, who, on conviction, shall pay any sum not exceeding £5, and forfeit the articles seized. If no conviction result, the articles seized or their value shall be restored.

Section 3.—Directions for recovery of penalties.

Section 4.—Provisions of 11 & 12 Vict., c. 43, extended to this Act.

Section 5.—No conviction shall be quashed for want of form, or be removed by certiorari.

Section 6 gives power of appeal.

Note.—The most important point decided in connection with this Act is that it is not necessary for anyone accused of offence against its provisions to have been seen leaving the land from which the game has been taken, but that the justices may infer from the circumstances of the case whether or not the accused has been unlawfully in pursuit of game, and give judgment accordingly. The Act has proved of singular effect in putting a stop to the collisions between poachers and gamekeepers which before its passing were so frequent, and so often resulted in bloodshed and crime.

(5.) The Poisoned Grain Prohibition Act, 1883.

Section 1 recites that it is expedient to prohibit the sale and use of poisoned grain or seed.

Section 2 enacts that everyone who offers for sale, or sells, any poisoned grain, seed or meal, is liable to a penalty of not more than £10.

Section 3 enacts that anyone who sows, or places, or causes to be sown or placed, any poisoned grain, renders himself liable to a similar penalty.

Section 4 permits the sale and use of solutions of poisonous nature for protecting or dressing seed for *bonâ fide* use in agriculture only.

Section 5 provides for the recovery of penalties. entitles informers (not

constables) to a moiety of the penalty, and indemnifies witnesses who may have participated in the offence.

Note.—This Act is intended to prevent the wholesale destruction by poison of animals and birds, whether game or not, and to avert the danger such operations cause to human life. It does not affect the Game Act, except in Section 3, which adds to the scope of the enactment. Further, by its preciseness, it leaves many opportunities for destroying vermin in whatever shape, and does not interfere with such farming operations as comprise the use of poisonous solutions, &c., for various purposes.

(6.) The Poisoned Flesh Prohibition Act.

This Act prohibits, under a penalty of £10, the placing in or upon land any poisoned flesh calculated to destroy life, but permits the use of such in dwelling houses, ricks, and inclosed buildings, yards, &c., for the destruction of vermin.

(7.) The Gun Licence Act, 1870.

Section 1.—This Act may be cited as the Gun Licence Act, 1870.

Section 2.—The term "gun" to include a firearm of any description, an air-gun, or any other kind of gun from which any shot, bullet or missile can be discharged.

Section 3.—Licence to use or carry a gun to be 10*s*.

Section 4.—The Commissioners of Inland Revenue to have management of the duty and licence.

Section 5.—Licence shall be dated on day of issue, and expire on the 31st March next.

Section 6.—Register of licences to be kept, and to be open for inspection by any justice of the peace or police officer, or duly appointed person.

Section 7 imposes a penalty of £10 for carrying or using a gun without a licence, elsewhere than in a dwelling house or the curtilage thereof, with the following exceptions:

(*a*) Persons in the Army, Navy, Volunteer service, constabulary or other police, when engaged in performance of their duty or at target practice.
(*b*) Holders of game licences.
(*c*) Persons employed to carry a gun for the use of the above only.
(*d*) Occupiers of any lands using gun to kill vermin or scare birds, and also persons so doing by order of any holder of a game licence.

(*e*) Gunsmiths, gun makers, and their servants.

(*f*) Carriers, when carrying guns in the ordinary course of their trade as common carriers.

Section 8.—Two or more persons carrying a gun in parts, all to be held liable.

Section 9.—Licence to be produced on demand from any officer of Inland Revenue or constabulary, by anyone carrying or using a gun, or name and address to be truly given, under a £10 penalty.

Section 10.—Duly authorised officers may enter and remain upon lands of any person carrying a gun, as long as may be necessary, to demand licence or name and address.

Section 11.—Licence to be void if holder be convicted under either the English Game Act or the Scotch Game Act.

Section 12.—This Act not to overrule any other Act prohibiting any person or persons from carrying firearms.

Note.—It will be seen that no private person has a right to take proceedings for the recovery of penalties consequent upon an infringement of the terms of this Act.

(8.) The Wild Birds Protection Act, 1880.

Section 1.—Short title.

Section 2.—"Wild birds" to include *all* wild birds.

Section 3.—"Any person who, between the first day of March and the first day of August in any year after the passing of this Act, shall knowingly and wilfully shoot or attempt to shoot, or shall use any boat for the purpose of shooting or causing to be shot, any wild bird, or shall use any lime, trap, snare, net or other instrument for the purpose of taking any wild bird, or shall expose or offer for sale, or shall have in his control or possession after the fifteenth day of March, any wild bird recently killed or taken, shall on conviction of any such offence before any two justices of the peace in England and Wales or Ireland, or before the Sheriff in Scotland, in the case of any wild bird which is included in the Schedule hereunto annexed, forfeit and pay for every such bird in respect of which an offence has been committed, a sum not exceeding one pound; and, in the case of any other wild bird, shall, for a first offence, be reprimanded and discharged on payment of costs, and, for every subsequent offence, forfeit and pay for every such wild bird in respect of which an offence is committed, a sum of money not exceeding five shillings. in addition to the costs, unless such person shall prove that the said wild bird was either killed, or taken, or bought, or received, during the period in which such wild bird could be legally killed or taken, or received from some person residing out of the United Kingdom. This section shall not apply to the owner or occupier of any land, or to any

person authorised by the owner or occupier of any land, killing or taking any wild bird on such land not included in the Schedule hereto annexed."

Schedule.

American Quail.
Auk.
Avocet.
Bee-eater.
Bittern.
Bouxie.
Colin.
Cornish Chough.
Coulterneb.
Cuckoo.
Curlew.
Diver.
Dotterel.
Dunbird.
Dunlin.
Eider Duck.
Fern Owl.
Fulmar.
Gannet.
Goat Sucker.
Godwit.
Goldfinch.
Grebe.
Greenshank.
Guillemot.
Gull (except Black-backed Gull).
Hoopoe.
Kingfisher.
Kittiwake.
Lapwing.
Loon.
Mallard.
Marrot.
Merganser.
Murre.
Nighthawk.
Nightingale.
Oriole.
Owl.
Ox Bird.
Oyster Catcher.
Peewit.
Petrel.
Phalarope.
Plover.
Pochard.
Puffin.
Purre.
Razorbill.
Redshank.
Reeve or Ruff.
Roller.
Sanderling.
Sand Piper.
Scout.
Sea Lark.
Sea Mew.
Sea Parrot.
Shearwater.
Shelldrake.
Shoveller.
Skua.
Smew.
Snipe.
Solan Goose.
Spoonbill.
Stint.
Stone Curlew.
Stonehatch.
Summer Snipe.
Tarrock.
Teal.
Tern.
Thicknee.
Tystey.
Whaup.
Whimbrel.
Widgeon.
Wild Duck.
Willock.
Woodcock.
Woodpecker.

If the offence be committed in regard to one of the wild birds comprised in the foregoing Schedule, the penalty is a sum not exceeding one pound for each bird; but if the offence be in respect of any other kind of bird, then the terms of the old Act of 1872 hold good, and reprimand and discharge on payment of costs for the first offence, and not more than five shillings and costs for each bird on any subsequent offence, would be the penalty incurred. It will be noted in respect to the above Schedule, that several birds are included several times under different names, so as to prevent any mistakes on the score of any particular name being purely local.

Section 4.—Penalty of 10*s.* incurred by refusing name and address, or giving false name and address.

Section 5 shows how the prosecution of offences may be effected.

Section 6.—As to trial of offences committed within the Admiralty jurisdiction, or on county boundaries.

Section 7.—The Act to come into operation 1st January, 1880, and repeal the Sea Birds Act, 1869 (32 & 33 Vict., c. 17); the Wild Birds Act, 1872 (35 & 36 Vict., c. 78); and the Wild Fowl Act, 1876 (39 & 40 Vict., c. 29).

Section 8.—The Secretary of State in Great Britain, or Lord Lieutenant of Ireland, may extend or vary the close time on application of the justices of quarter sessions.

Section 9.—Act not to extend to St. Kilda; and other localities may be exempted on application, as in the preceding section.

There is a very useful little work on this Act published at *The Field* office, which puts into a clear and concise form the effects which this Act brings about in regard to wild birds.

(9.) THE GROUND GAME ACT, 1880.

Section 1.—Every occupier of land shall have, as incidental to and inseparable from his occupation of the land, the right to kill and take ground game thereon, concurrently with any other person who may be entitled to kill and take ground game on the same land; provided that the right conferred on the occupier by this section shall be subject to the following limitations:

1. The occupier shall kill and take ground game only himself or by persons duly authorised by him in writing:
   - (*a*) The occupier himself and one other person authorised in writing by such occupier shall be the only persons entitled under this Act to kill ground game with firearms.
   - (*b*) No person shall be authorised by the occupier to kill or take ground game, except members of his household resident on the land in his occupation, persons in his ordinary service on such land, and any one other person *bonâ fide* employed by him for reward in the taking and destruction of ground game.
   - (*c*) Every person so authorised by the occupier, on demand by any person having a concurrent right to kill and take the ground game on the land, or any person authorised by him in writing to make such demand, shall produce to the person so demanding the document by which he is authorised, and in default he shall not be deemed to be an authorised person.
2. A person shall not be deemed to be an occupier of land for the purposes of this Act by reason of his having a right of common over such lands, or by reason of an occupation for the purpose of grazing or pasturage of sheep, cattle or horses, for not more than nine months.
3. In the case of moorlands and uninclosed lands (not being arable lands),

the occupier and the persons authorised by him shall exercise the rights conferred by this section, only from the eleventh day of December in one year until the thirty-first day of March in the next year, both inclusive; but this provision shall not apply to detached portions of moorlands or uninclosed lands adjoining arable lands, where such detached portions of moorlands or uninclosed lands are less than twenty-five acres in extent.

Section 2.—Where the occupier of land is entitled otherwise than in pursuance of this Act to kill and take ground game thereon, if he shall give to any other person a title to kill and take such ground game, he shall nevertheless retain and have, as incident to and inseparable from such occupation, the same right to kill and take ground game as is declared by Section 1 of this Act. Save as aforesaid, but subject as in Section 6, hereafter mentioned, the occupier may exercise any other or more extensive right which he may possess in respect of ground game or other game, in the same manner and to the same extent as if this Act had not passed.

Section 3.—Every agreement, condition or arrangement which purports to divest or alienate the right of the occupier as declared, given and reserved to him by this Act, or which gives to such occupier any advantage in consideration of his forbearing to exercise such right, or imposes upon him any disadvantage in consequence of his exercising such right, shall be void.

Section 4.—The occupier and the persons duly authorised by him as aforesaid shall not be required to obtain a licence to kill game for the purpose of killing and taking ground game on land in the occupation of such occupier, and the occupier shall have the same power of selling any ground game so killed by him, or the persons authorised by him, as if he had a licence to kill game, provided that nothing in this Act exempt any persons from the provisions of "The Gun Licence Act, 1870."

Section 5.—Where, at the date of the passing of this Act, the right to take and kill ground game on any land is vested by lease, contract of tenancy or other contract *bonâ fide* made for valuable consideration in some person other than the occupier, the occupier shall not be entitled under this Act, until the determination of that contract, to kill and take ground game on any such land, and in Scotland when the right to kill and take ground game is vested by operation of law or otherwise in some person other than the occupier, the occupier shall not be entitled by virtue of this Act to kill or take ground game during the currency of any lease or contract of tenancy under which he holds at the passing of this Act, or during the currency of any contract made *bonâ fide* for valuable consideration before the passing of this Act, whereby any other person is entitled to kill and take ground game on the land. For the purposes of this Act, a tenancy from year to year, or a tenancy at will, shall be deemed to determine, at the time when such tenancy would by law become determinable, if notice or warning to determine the same were given at the date of the passing of this Act. Nothing in this Act

shall affect any special right of killing or taking ground game to which any person other than the landlord, lessor or occupier may have become entitled before the passing of this Act, by virtue of any franchise, charter, or Act of Parliament.

Section 6.—No person having a right of killing ground game under this Act or otherwise shall use any firearms for the purpose of killing ground game between the expiration of the first hour after sunset and the commencement of the last hour before sunrise, and no such person shall, for the purpose of killing ground game, employ spring traps except in rabbit holes, nor employ poison; and any person acting in contravention of this section shall, on summary conviction, be liable to a penalty not exceeding two pounds.

Section 7.—Where a person who is not in occupation of land has the sole right of killing game thereon (with the exception of such right of killing and taking ground game as is by this Act conferred on the occupier, as incident to and inseparable from his occupation), such person shall, for the purpose of any Act authorising the institution of legal proceedings by the owner of an exclusive right to game, have the same authority to institute such proceedings as if he were such exclusive owner, without prejudice nevertheless to the right of the occupier enforced by this Act.

Section 8.—For the purposes of this Act, the words "ground game" mean hares and rabbits.

Section 9.—A person acting in accordance with this Act shall not thereby be subject to any proceedings or penalties in pursuance of any law or statute.

Section 10.—Nothing in this Act shall authorise the killing or taking of ground game on any days or seasons, or by any methods, prohibited by any Act of Parliament in force at the time of the passing of this Act.

Section 11.—This Act may be cited for all purposes as "The Ground Game Act, 1880."

It is not consistent with our prescribed scope to discuss the peculiar terms and aims of this Act, and for further information as to its bearing must refer our readers to the small work on it published at *The Field* office. To practical men the conditions under which the occupier has to effect the capture of the coneys and hares, which he may find destroying his crops, must prove very mirth-provoking. We expect to see this Act amended, in more than one respect, before long.

Game Acts applying to England and Wales.

(10.) The English Game Act (1 & 2 Will. IV., c. 32).

Section 1 repeals old statutes.

Section 2.—The word "game" to include hares, pheasants, partridges, grouse, heath or moor game, black-game and bustards.

Section 3 enacts that any person killing or taking game, or using any gun, dog, net, or other engine or instrument for that purpose, on Sunday or Christmas-day, is subject on conviction by two justices, to a penalty not exceeding £5 and costs, and prohibits the taking of game as under:

Partridges	.. ..	from 1st February to 1st September.
Pheasants	.. ..	,, 1st February to 1st October.
Black Game (generally)	.. ..	,, 10th December to 20th August.
Do. (Somerset, Devon, and New Forest) ..		,, 10th December to 1st September.
Grouse ..	.. ..	,, 10th December to 12th August.
Bustards	.. ..	,, 1st March to 1st September.

Penalty to be £1 for every head of game taken or killed during these close times; £10 for laying poison for the purpose of killing game.

Section 4.—Any person licensed to deal in game having possession of or dealing in game after ten days from the expiration of the season, or any unlicensed person dealing in game after ten days, or having possession of any game (except such as are kept in a mew or breeding place) within forty days from the expiry of the season, shall be liable to a penalty not exceeding £1 for every head of game.

Section 5.—Nothing in this Act shall in any way affect the existing laws relating to game certificates.

Section 6.—Game certificates (*i.e.*, licences to kill game) qualify persons to take and kill game (subject to trespass). Gamekeeper's licence to hold good only within the limits of his appointment as gamekeeper. Infringement of this renders him liable to be proceeded against as if he had no game certificate whatever.

Section 7.—Under existing leases the game to be the property of the landlord, except in cases where, previous to the passing of this Act, it has been ceded to the tenant, by lease or agreement.

Section 8.—Act not to affect any existing or future agreements respecting game, nor any rights of manor, forest, chase or warren, nor reservations in private Acts.

Section 9.—Act not to affect any royal forest rights, nor give to lords of manor any additional rights not possessed by them before the passing of the Act.

Section 10 enacts that the game on waste lands shall still remain the property of the lord of the manor, and that the Act shall not affect any cattle-gates or right of common.

Section 11.—Where the landlord or lessor has reserved the right in game, he may authorise anyone who has a game licence to pursue and kill game upon the land.

Section 12.—Where the landlord has the right in game upon any land in exclusion of the occupier, if the occupier kill or take game, or cause it to be killed or taken, he shall be liable to a penalty not exceeding £2 for the offence, and not exceeding £1 for every head of game so killed or taken.*

Section 13.—Lords of manor may appoint gamekeepers, and authorise them to seize and take all dogs, nets, and other engines, and instruments used by anyone for taking or killing game, by persons unpossessed of the necessary licence to kill game.

Section 14.—Lords of manor have power to grant deputations.

Section 15.—Every person seised in fee or as of freehold of lands in walls of clear £500 annual value, such lands not being within any manor, lordship or royalty, or being within the same shall have been enfranchised or alienated therefrom, may appoint gamekeepers.

Section 16.—All appointments of gamekeepers to be registered with the clerk of the peace.

Section 17.—Persons having a licence to kill may also sell game to licensed dealers. Gamekeepers may sell game on account of their masters only.

Section 18.—Justices to hold a special sessions yearly in July for the purpose of granting licences to deal in game, and are authorised to grant licences to any householder or keeper of shop or stall—not being an innkeeper, victualler, or licensed to sell beer by retail—or the owner, guard or driver of any mail coach, stage coach, stage waggon, van, or other public conveyance, or a carrier or higgler, or being in the employment of any of the above-mentioned persons, to buy game at any place, from any person who may *lawfully* sell game, and to sell the same at *one* house, shop or stall, only kept by him; provided that persons so licensed have their names in full, together with the words "Licensed to deal in Game," on a board in front of their house, shop, &c.

Section 19 (repealed) required persons having the justices' licence to deal in game to take out a Government licence annually, with a duty of £2, under a penalty of £20 (*vide* Game Licence Act, p. 543).

Section 20 (repealed) required collectors of assessed taxes to make out lists of persons licensed, and provided for the charging of the duty (*vide* Game Licence Act, p. 543).

Section 21.—One licence to suffice for two or more partners.

Section 22.—Any person licensed under this Act, convicted of any offence against it, forfeits his licence.

Section 23.—Any person killing or taking game, or using any dog, gun, net,

* This section is to some extent modified by the Ground Game Act.

&c., for the purpose of searching for, or killing, or taking game without a game licence, to be subject to a penalty not exceeding £5 for every offence, in addition to the penalty under the Game Licence Act.

Section 24.—Any person not having right of killing game upon any land, nor having permission from the person having such right, who shall wilfully take or destroy the eggs of any game-bird, swan, wild-duck, teal or widgeon, or shall knowingly have any such eggs in his possession, shall incur a penalty not exceeding 5*s.* for every egg, and costs.

Section 25.—Persons dealing in game unlawfully to incur a penalty of £2 for every head of game so dealt in.

Section 26 permits innkeepers or tavern keepers to sell game for consumption in their own houses, such game having been obtained from a duly licensed person.

Section 27.—Any person buying game from anyone not licensed to deal in game to be subject to a penalty not exceeding £5 and costs.

Section 28.—Persons assuming to be licensed under this Act, to incur a penalty not exceeding £10 and costs, and licensed persons contravening the terms of this Act to be subject to a similar penalty.

Section 29 permits servants of licensed persons to deal in game in every case where the same would have been lawful if transacted by such licensed dealer himself.

Section 30.—Any person committing trespass in the day time in pursuit of game, or woodcocks, snipes, quails, landrails, or coneys, shall be liable to a penalty not exceeding £2 and costs. If any persons, to the number of five or more, commit such offence, the penalty to be not more than £5 each and costs, and the permission of the occupier, he not being entitled to the game, shall not be held sufficient defence.

Section 31.—Trespassers in search of game may be required by the person having the right of killing the game, or by any person duly authorised by him, to quit the land, and to tell their full name and place of abode, or in the event of refusal they may be arrested, and brought before a justice of the peace, and upon conviction shall pay a penalty not exceeding £5 and costs; but the party arrested must be discharged unless brought before a justice within twelve hours, but may be subsequently summoned.

Section 32.—Should five or more persons offend (as in Section 31), and by violence or menace prevent or endeavour to prevent any person authorised as before mentioned (Section 31) from approaching, for the purpose of requiring them to quit or tell their full name and place of abode, each person shall be liable to a penalty not exceeding £5 and costs.

Section 34 defines "day time," for the purposes of this Act, to commence at the beginning of the last hour before sunrise, and to conclude at the expiration of the first hour after sunset.

Section 35.—The penalties as to trespassers not to apply to any persons hunting,

coursing, or being in fresh pursuit of any deer, hare or fox already started upon any other land.

Section 36.—Game may be taken from trespassers refusing to give it up, by anyone having the right so to do.

Section 37.—Penalties to be paid to the overseer or some other officer of the parish, as the justice may direct; one half to go to the informer, and the other half to the county (as per 5 & 6 Will. IV., c. 20, s. 31).

Section 38.—Justices to decide time within which the penalties are to be paid, and in default the offender to be imprisoned in the common gaol or house of correction (with or without hard labour, as the justices shall decide), for a term not exceeding two calendar months, where the penalty, excluding costs, shall not exceed £5, or for not more than three months in any other case, the imprisonment always to cease on payment of the amount of the penalty and costs.

Section 39 gives the form of conviction.

Section 40.—Justices to have power to summon witnesses, and any persons failing to appear upon such summons, without reasonable excuse, to be liable to a penalty not exceeding £5.

Section 41.—The prosecution to be commenced within three calendar months from commission of the offence. The section also cites the mode of enforcing appearance of offenders, &c.

Section 42.—It shall not be necessary for the prosecutor to negative by evidence any certificate, licence, consent, authority, or other matter of exception or defence, but the party adducing the same shall prove it.

Section 43.—Convictions to be returned to sessions for record.

Section 44.—Persons convicted to be entitled to appeal to the same.

Section 45.—Informality not to hold as reason for quashing any conviction.

Section 46.—This Act not to preclude actions for trespass, but no double proceedings to be taken for the same trespass.

Section 47.—Limits the extent of actions against persons acting in pursuance of this Act.

Section 48.—This Act to apply to England and Wales only.

Note.—This Act has been amended in several of its sections by other Acts relating to game, which have been passed since, but as it stands it still remains the chief of the English game laws. It applies, however, with the exception of authorising apprehension of night trespassers, only to poaching in the day time. For the prevention of night poaching, the chief Act is the Night Poaching Act,

but there are one or two sections of other Acts which also apply to such offences.

Game Acts applying to Scotland.

The Game Laws of Scotland are considerably more complicated than those of England, without showing any material improvement on them. They, moreover, take up a different standpoint as to the property in game. In the southern province of Great Britain, game is vested in the tenant, whereas in Scotland it is vested in the landlord, there being, of course, in each case no agreement to the contrary. In Scotland the word "game" is not so definite as in England, for although, as a rule, game is held to be the same in both countries, the Scottish Acts individually do not apply to every kind of game. As far as licences for game are concerned, the laws of the two countries are identical; but in Scotland a landed qualification is, in the first instance, necessary to kill game, although it is perfectly permissible for a person qualified by the possession of a "plough-gate of land" (1621, c. 31) to lease the game and right of killing same to an unqualified person. This Act is still in force, and applies, in antiquated terms, to shooting and hunting:

(11.) Qualification to Kill Game.

"Our soveraigne lord, and estates of this present parliament, statutes and ordaines, that no man hunt nor haulk at any time hereafter, who hath not a plough of land in heritage, under the paine of ane hundreth pounds (£8 6*s.* 8*d.*). Ordaines his majestie to have the one halfe of the penaltie of the contraveeners of this present Act; and the dilator to have the other halfe of the said penaltie."

The "plough-gate" of land is generally held to be from 96 to 104 acres Scotch).

(12.) Close Times in Scotland.

The Acts regulating the close times for killing game and for moor-burning are: 1707, c. 13; 13 Geo. III., c. 54; and 23 and 24 Vict., c. 90. Enumeration of

their various sections would probably prove confusing, and it will be better to set out the various close times as under, the stipulations applying to them being as regards Scotland only, in addition to any close times defined by Acts applying to the United Kingdom generally:

Muirfowl or Tarmagan (*sic*) ..	.. 10th December to 12th August.
Heathfowl	.. 10th December to 20th August.
Partridge	.. 1st February to 1st September.
Pheasant	.. 1st February to 1st October.

Penalty for every bird "taken, killed, destroyed, carried, sold, bought, found or used," £5; and, in default, two months' imprisonment for each £5.

The Act 13 Geo. III., c. 54, s. 4, limits the time for muir-burn from 1st November to 11th April; anybody who sets fire to any heath or other moorland growth between 11th April and 1st November, renders himself liable for the first offence to £2, for the second to £5, and for the third £10, the alternatives being respectively six weeks, two months, or three months' imprisonment.

(13.) The Scotch Game Act.

Section 1.—Persons trespassing in pursuit during the day time, liable to a penalty of not exceeding £2 and costs. Persons committing similar offence, disguised, or to the number of five or more, liable to a fine of £5 and costs.

Section 2.—Such offenders may be required to quit the land, and give their names and addresses, or in the event of refusal be arrested, carried before a justice, and on conviction fined not exceeding £5 and costs, provided that the arrest and conviction be obtained within twelve hours.

Section 3 defines day time as commencing with the beginning of the last hour before sunrise, and as ending at the end of the last hour after sunset.

Section 4 exempts persons hunting and coursing, when in fresh pursuit of game.

Section 5.—Persons having right to the game, or their servants, may take game from trespassers, if the latter do not give same up when requested.

Section 6.—Offenders against this Act liable to a penalty of £5, in addition to any other fine, for any assault on anyone acting under this Act. Default for non-payment not exceeding three months' imprisonment.

The remaining sections, 7—17, determine the mode of procedure for the recovery of penalties, &c.

Game Acts applying to Ireland.

(14.) 10 Will. III., c. 8.

The only important sections of this Act are as under:

Section 2.—Persons not having the estate qualification required by s. 10 shall not keep any hound or spaniel, except whelps, for persons qualified, on pain of

such being taken away by any justice or person having £40 per annum freehold in the county, who may detain or dispose of same, and shall on conviction be liable to a penalty of £5 for each offence.

Section 3.—Any person qualified to keep any hound or spaniel, and who conceals or shelters the same for an unqualified person, shall forfeit £40.

Section 8 enacts that no person not having freehold estate of £40 a year, or personal estate of the value of £1,000, can shoot at, kill, take or destroy any hare, pheasant, partridge, grouse or quail, under a penalty of 10*s.*

Section 20.—Dogs may be kept and used by tenants in a manor, with lord's consent.

(15.) Close Times.

The various Acts regulating the close times for game in Ireland are given on page 540; their effects are set forth in the table on page 542.

(16.) Game Trespass Act (27 Geo. III., c. 35).

Section 1 repeals some previous Acts.

Section 2 repeals 10 Will. III., c. 8, s. 14, and part of s. 8 and s. 15.

Section 3 recites 10 Will. III., c. 8, s. 7, and enacts that nothing therein as to muirburn shall extend to such as is broken up for agriculture or planting.

Section 4 provides a number of penalties for killing, taking or dealing in game out of season and on Sundays, for taking game unlawfully, for tracing hares, and for destroying eggs and nests of game.

Section 5.—Unqualified persons using dog, gun, snare, net, &c., for taking game at night, to forfeit a penalty of £10.

Section 6.—Higglers, &c., having possession of game, not the property of qualified persons, to forfeit £5. (This section is, however, overruled by the English Game Act, 1 & 2 Will. IV., c. 32, s. 26, except so far as concerns quails and landrails.)

Section 7.—Repealed by the Game Licence Act.

Section 8 specifies the qualifications for keeping dogs.

Section 9.—Repealed as above.

Section 10.—Unauthorised persons trespassing in pursuit of game liable to a penalty not exceeding £10.

Section 11.—Persons not to be deemed looking for game who shall not appear to be provided with a dog or dogs, gun or guns, net or nets, or some other implements for taking or killing game.

Section 12.—Persons qualified may follow four-footed game into the lands of other persons.

Section 13.—Damages may be recovered for so doing.

Sections 14, 15.—Repealed.

Section 16.—Dogs belonging to persons not qualified may be destroyed by virtue of justice's warrant.

Section 17.—Further redress for damage sustained by dogs may be recovered.

Section 18 saves the rights or privileges of lords of manors.

Sections 20, 21, 22, 23.—Modes of judicial procedure under this Act.

(17.) GAME LICENCE ACT [IRELAND] (5 & 6 Vict., c. 81).

Section 1 recites 56 Geo. III., c. 56, and transfers collection and management of the duties of £3 3*s.* payable on gamekeepers' and other certificates to kill game in Ireland, to the Commissioners of Excise, but these duties have been repealed by 23 & 24 Vict., c. 90, s. 1. *Vide* p. 543.

Section 2.—Persons, other than gamekeepers, keeping dogs for killing game must take out a game licence.

Section 3.—Gamekeeper must register his deputation with the excise officer and take out a licence.

Section 4.—Certificates to be granted by Supervisor of Excise.

Section 5.—Unlicensed persons keeping dogs to be liable to a penalty of £20.

Section 6.—Commissioners of Excise to publish list of licensed persons.

Section 7.—Gamekeepers' licences may be transferred on change of servants.

Section 8 compels production of certificate; penalty for refusal of same, or of name and address, £50. Anyone refusing production of certificate may be apprehended.

Section 9 repeals so much of 55 Geo. III., c. 100, as relates to game certificates.

Section 10.—Act not to repeal or alter 7 & 8 Geo. IV., c. 49.

This Act also contains schedule of forms of certificate.

(18.) 23 & 24 VICT., c. 113, s. 43.

This section of the above Act stipulates that no person shall be required to take out any licence or certificates to authorise the taking or killing of any *rabbits* in Ireland.

TRESPASS.

Notwithstanding all the foregoing laws, the greater number of convictions against persons in pursuit of game are obtained by action at common law for trespass. It may, therefore, be as well to give the subject some attention.

By the common law, anyone having a freehold estate in

land is entitled to the sole use of it, and may himself order off or remove anyone infringing his right. Unless the landlord reserve to himself the right of entry, the tenant or occupier holds equal privilege, and may exercise it against all comers, landlord included.

A trespass is held to be every unwarrantable entry on another's land, and such trespass is moreover held to carry some damage with it, for which the owner or occupier is entitled to recover damages. Mr. Oke, in his "Handybook of the Game Laws,"* gives the following instances in which actions for trespass in pursuit may be or have been sustained:

(1.) A party, without entering the land of another, shooting into it, and striking the soil with the shot. (2.) Shooting over it maliciously, and with intent to frighten game from a preserve. (3.) With dogs and guns, hunting for game. (4.) Coursing or hunting with hounds, whether they are in fresh pursuit or not of any deer, hare or fox started in some other or the same land (1 & 2 Will. IV., c. 32, s. 35), does not apply here). (5.) A dog entering land with the consent or by the incitement of its master. (6.) Digging out a fox, badger or otter. (7.) Hunting on another's ground for them. (8.) Breaking hedges whilst in pursuit of beasts of prey. (9.) Entering any building of a stranger to take fox, badger or otter.

Dogs trespassing may not *legally* be shot, except they be shot in the act of killing game, poultry, live stock, or damaging property. Dog-spears may be set for them, and

* "Oke's Handybook of the Game Laws," by J. W. Willis Bund, M.A., LL.B. London: Butterworth, 7, Fleet Street. Third Edition. 1883.

highly-scented lures be attached to same to lure the dogs trespassing to the spears, provided the baits be not sufficiently near one's neighbour's property to lure the dogs from off the same.

Man traps and spring guns are illegal. To set them constitutes a misdemeanour.

Notices not to Trespass.

Any trespass committed after special notice to the contrary is considered a wilful trespass, which adds to the offence and consequent penalty.

The following are the notices recommended by Mr. Oke, in his work before alluded to. The first two are best exhibited on notice boards at all extremities of the estate, and similar suitable places around its boundary :

Notice.

Notice is hereby given, that all persons found trespassing in search or pursuit of game, on the estates of ——— and ———, in the parish of ———, the property of ———, Esq., will be prosecuted.

E F, *Steward.*

We would also add the following, as necessary in some cases to replace the above :

Notice.

Notice is hereby given, that any persons found in and upon the manor of ——— will be treated as trespassers, and prosecuted as such.

By order,

H B.

All stray dogs will be shot.

Caution.

Take notice, that all trespassers on any land on either side of the adjoining highway, for [half a mile] in length, and [one mile] in depth, on each side, and opposite to this notice, will be prosecuted as wilful trespassers under the Game Act, and otherwise according to law.

C D.

NOTICE TO A PARTICULAR PERSON NOT TO TRESPASS.

To Mr. ————————

I hereby give you notice not to enter or trespass upon any of the lands and hereditaments [*if given by a tenant, say,* in my occupation] belonging to me, [and, *if so,* in my occupation, *or,* in the occupation of E F and F G], situate at, &c., and called ————————, for the purpose of pursuing, taking, killing, or destroying game [*or* for the purpose of hunting, hawking, coursing, shooting, fishing or fowling], or for any other purpose or pretext whatsoever: And that in case you should do so after the service of this notice [*or,* in case, after service of this notice, you shall enter or trespass upon the said lands and hereditaments, or any part thereof, for any or either of the purposes aforesaid], you will be deemed a wilful trespasser, and dealt with [*or* proceeded against] accordingly.

Dated at ———, this ——— day of ———, 18—.

C D.

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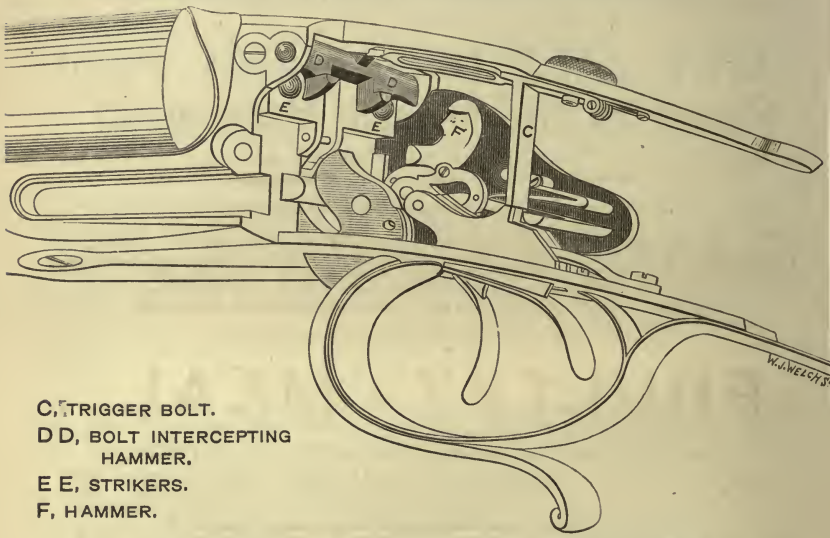

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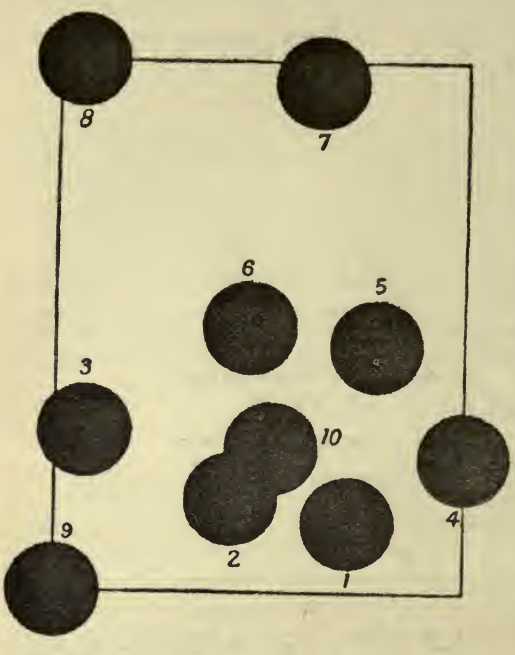

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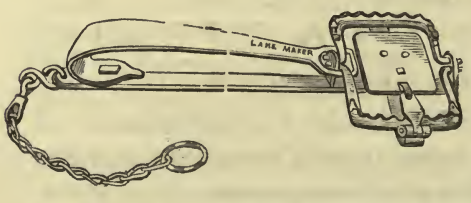

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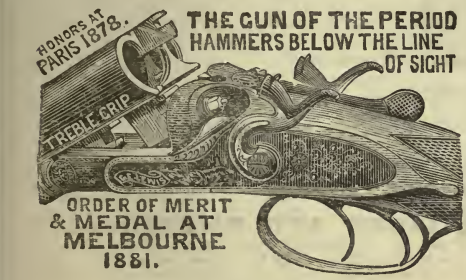
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